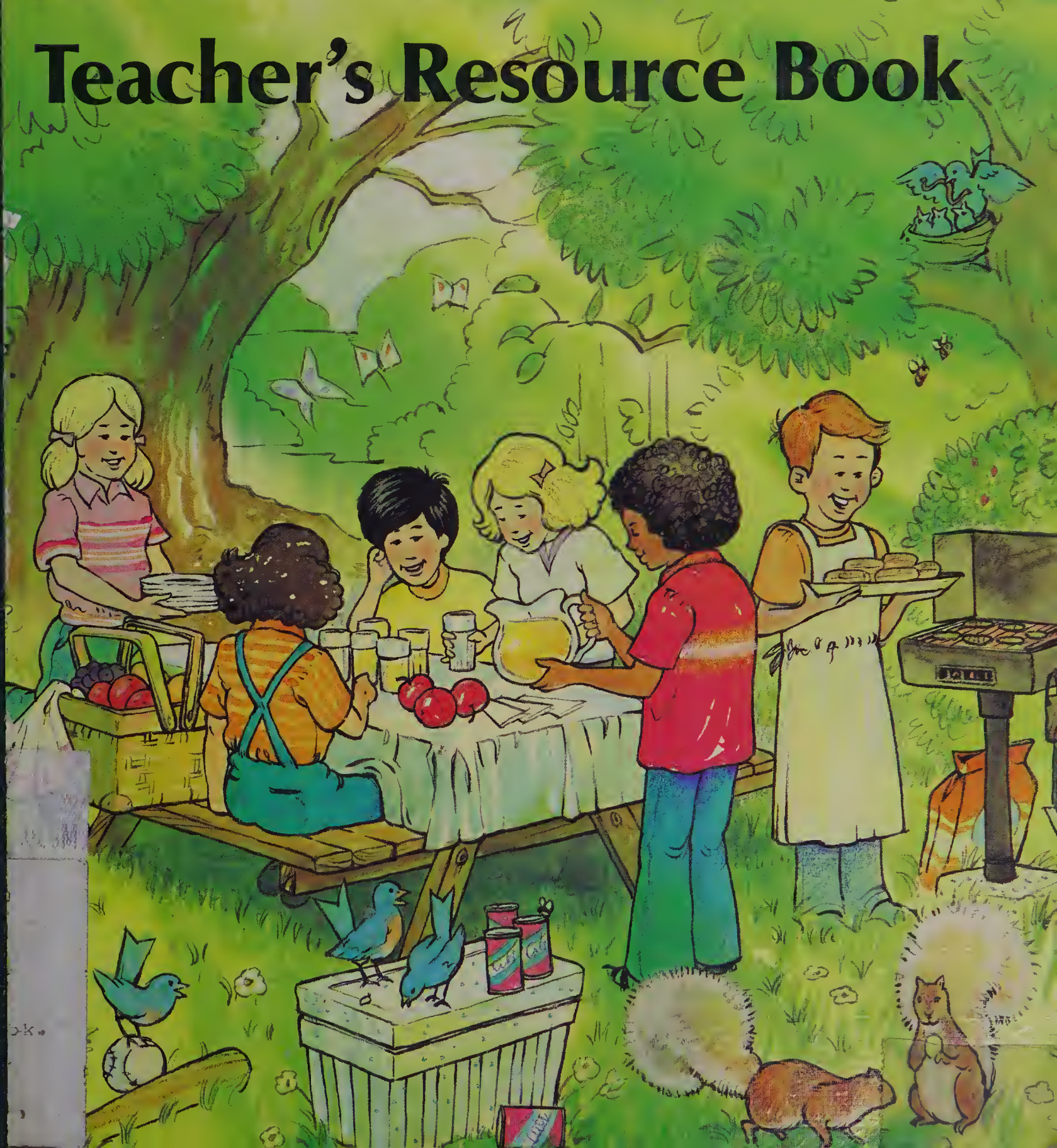


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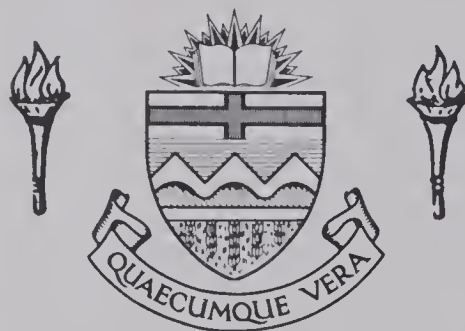
Mathematics

Teacher's Resource Book

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Houghton Mifflin **1** Mathematics Teacher's Resource Book

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Houghton Mifflin Canada Limited

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Houghton Mifflin Mathematics 1

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CONTENTS

	Introduction	T4
	Learning Objectives	T6
	Scope and Sequence	T13
UNIT 1	Numerals to 5	1
UNIT 2	Numerals to 10	21
UNIT 3	Addition Facts to 5	41
UNIT 4	Subtraction Facts to 5	61
UNIT 5	Addition and Subtraction to 7	81
UNIT 6	Addition and Subtraction to 9	101
UNIT 7	Addition and Subtraction to 10 Numerals to 20	121
UNIT 8	Geometry and Measurement	141
UNIT 9	Numerals to 100	161
UNIT 10	Addition and Subtraction to 12	181
UNIT 11	Fractions and Measurement	201
UNIT 12	Money and Counting	221
	Extra Practice	241
	Index	328

Introduction

Development

Houghton Mifflin Mathematics is developed in six strands: **Numeration, Arithmetic, Geometry, Measurement, Graphing, and Problem Solving.** The first five strands are treated in a *block* approach. This allows for continuity and easier reinforcement and retention of mathematical skills. Problem Solving is an integral part of the entire program and is treated within all five of the other strands. (See *Problem Solving*.)

A typical unit of *Houghton Mifflin Mathematics* contains ten lessons, each on a single, back-to-back, tear-out sheet in the student's workbook. It must be emphasized that the workbook pages only provide part of a lesson: some teacher-guided developmental exercises and pencil-and-paper practice. A complete lesson must also include the introductory and teaching ideas in the TRB (*Teacher's Resource Book*) along with the follow-up activities. The use of materials in lesson activities is considered an integral part of the development of the objectives. Care is taken to provide a smooth transition from manipulative/oral activities to illustrations and exercises on workbook pages.

Each lesson treats only one objective. The objectives are numbered by a computer code to allow easy tracking of skills for reinforcement and remediation. (See *Learning Objectives*, Page T6.) This approach provides learning in "bite-sized bits" to ensure students master each objective before proceeding to the next level of difficulty.

Organization

The mathematical development in *Houghton Mifflin Mathematics 1* follows this sequence:

1. Numerals to 10 (2 units)
2. Concepts of addition and subtraction (2 units)
3. Basic addition and subtraction facts to 10 (2½ units)
4. Numerals to 20 (½ unit)
5. Geometry and Measurement: length and time units (1 unit)
6. Numerals to 100 (1 unit)

7. Basic addition and subtraction facts to 12 (1 unit)
8. Concept of fractions (½ unit)
9. Measurement: capacity, mass, temperature, and area (½ unit)
10. Money and skip counting: readiness for multiplication (1 unit)

The sequence was written with the intention that it be done in order. For example, measurement lessons often assume that the number development in the preceding chapters has been done. However, some flexibility is possible for teachers who wish to alter the sequence. Geometry can be done at any time and some of the numeration can precede the arithmetic units if desirable.

However, teachers should note that the lesson plans were written with the previous sequence in mind. Arithmetic lessons contain both readiness for counting with larger numbers plus activities for review and reinforcement of numeration concepts that are assumed to have been covered. If the sequence is altered, care must be taken to ensure that the TRB suggestions are still appropriate for the students' present level of development.

Review and Testing

The authors of *Houghton Mifflin Mathematics* recognize the importance of review and testing resources so that the teacher can keep track of the skill development of each student and provide extra help when it is required. It must be emphasized that testing in primary mathematics involves more than pencil-and-paper tasks. Such exercises are useful but, when used alone, will not necessarily determine whether a student has really understood and mastered each objective.

The primary program contains the following features:

1. An optional **Pretest** in the TRB. This may be helpful to keep track of the students' development. However, it should be used with discretion. On one hand, it may be frustrating for

the students if they have no background in the skills being tested. In this case, use the Pretest as a follow-up practice sheet or as a review sheet later in the year. On the other hand, success on the Pretest does not mean that students have completely mastered the objectives of the unit. They may be able to do pencil-and-paper practice by rote without fully understanding the concepts. This is particularly true for units that introduce addition and subtraction operations.

2. The suggestions in the **Teacher's Resource Book** both in the unit introductions and in the lesson plans often give numerous ideas for assessing the students' understanding of the objectives. As well ideas are given for classroom activities which will help reinforce concepts covered in earlier units.

3. **Extra Practice** is available for every lesson in Houghton Mifflin's Testing and Practice Masters. The half-page black-line masters are reproduced with answers in the TRB.

4. The **Test** in the workbook provides groups of questions on the objectives of the unit. The TRB describes the objectives being tested. The same caution applies as noted in the section *Pretest*.

5. A **Post-test** is reproduced in the TRB and has the advantage that the students have had no prior access to it. The Pretests and Post-tests are included in the Testing and Practice Masters in addition to being given in the TRB in reduced size with answers.

6. A most important part of the primary program is the **Informal Assessment** given in the TRB along with the test at the end of each unit. These assessments can provide teachers with valuable information about individual differences and developmental growth, as well as vital information on readiness for subsequent material.

7. Finally, the pages at the end of the **Workbook** provide still more practice including one full page of Extra Practice for each unit.

Activity Centres

The introduction to each unit includes a suggestion for setting up an Activity Centre. Reference to the centre and additional suggestions for activities is made in the individual lesson plans of the units. The materials for these activities are standard ones usually available in primary classrooms or, alternatively, they are items that children can make or disposable items they can bring from home. They are summarized in the materials list also provided in the unit introduction. Teachers should pick and choose from the activities according to the students' ability and also according to the materials that are available. Often, substitute materials may occur to the teacher where the exact ones suggested are not on hand.

The TRB also provides extra black-line masters which can be torn out and reproduced to make into many of the materials mentioned in the Activity Centres. These accompany the unit introductions of the given unit. Such masters include grids, dot paper, blank clock faces, picture-set cards, numeral cards, and many more.

Problem Solving

Problem Solving is an area of study receiving increased emphasis in the elementary mathematics curriculum. It is not enough for students simply to master basic mathematical skills. In today's world, they must be able to apply those skills to solve practical, real-world problems.

The first step in this process involves interpretation of simple, routine problem situations, given first in pictures, then in words. Beyond that, a complete mathematics program must give the students an armoury of strategies with which to attack all types of problems, routine and non-routine. Such strategies include drawing diagrams, guesswork, using a model, estimation, looking for patterns, making lists, simplifying or rewording the problem, and many more. See the Scope & Sequence on page T17 for a complete list of problem solving objectives for this grade level.

In the early years almost all numeration and arithmetic lessons involve mathematical interpretation of a picture or else drawing a picture to interpret a mathematical statement. This is a primary problem solving objective. In that sense, problem solving is an integral part of the entire program. However, *Houghton Mifflin Mathematics* goes farther in providing extra lessons on specific problem solving objectives. The program deals with problem solving in several different ways:

1. Lesson Plans

Every possible lesson puts the mathematical objective in a real or concrete setting so that students experience mathematics as a useful subject. They are also prepared for types of problems that will occur in the problem solving lessons.

2. Problem Solving Lessons

Most units have at least one full lesson on a specific problem solving objective. In the primary years, the students progress from pictorial interpretations to solving simple, routine word problems.

3. Reinforcement and Enrichment

These sections on the right-hand page of the TRB in each lesson often provide problem solving experiences other than the routine types included in the workbook.

4. Extra Practice

The Testing and Practice Masters also have extra problem solving practice accompanying each PS objective.

5. Problem Solving Activities

Every grade level has a separate booklet of problem solving activities, correlated to the lessons in the textbook. These booklets provide ample opportunity for students to extend their problem solving abilities even further.

Learning Objectives

The following objectives are covered in depth in *Houghton Mifflin Mathematics 1*.

Numeration

		Lesson	Pages
N1	Recognize and print the numerals 1 and 2.	1-1	1-2
N2	Recognize and print the numerals 3 and 4.	1-2	3-4
N3	Review sets and the numerals 1 to 4.	1-3	5-6
N4	Recognize and print the numeral 5.	1-4	7-8
N5	Recognize and print the numeral 0.	1-5	9-10
N6	Identify equivalent sets through matching and one-to-one counting.	1-6	11-12
N7	Identify a set greater than another.	1-7	13-14
N8	Recognize and construct a set with one more than another set.	1-8	15-16
N9	Order sets and the numerals 0 to 5.	1-9	17-18
N10	Recognize the numerals 0 to 5 and count to 5.	1-10	19
N11	Recognize and print the numeral 6.	2-1	21-22
N12	Recognize and print the numeral 7.	2-2	23-24
N13	Recognize and print the numeral 8.	2-3	25-26
N14	Recognize and print the numeral 9.	2-4	27-28
N15	Recognize and print the numeral 10.	2-5	29-30
N16	Identify a set that is less than another.	2-6	31-32
N17	Identify and construct a set with one less than another set.	2-7	33-34
N18	Order sets and numerals 0 to 10.	2-9	37-38
N19	Match sets, numerals, and words 0 to 10.	2-10	39
N20	Identify a group of ten, and leftovers.	7-4	127-128

N21	Associate two-digit numerals to 19 with a group of ten and leftover ones.	7-5	129-130
N22	Identify and compare sets to 13.	7-6	131-132
N23	Identify and compare sets to 19.	7-7	133-134
N24	Compare numbers to 19; review addition and subtraction facts to 10.	7-8	135-136
N25	Identify and order numbers to 20.	7-9	137-138
N26	Order numbers to 20.	7-10	139
N27	Count sets and print numerals to 25.	9-1	161-162
N28	Count tens and print numerals to 90.	9-2	163-164
N29	Recognize and count dimes.	9-3	165-166
N30	Recognize tens and ones in numerals to 59.	9-4	167-168
N31	Compare and order numerals to 50.	9-5	169-170
N32	Recognize tens and ones in numerals to 79.	9-6	171-172
N33	Count on by ones and tens from sets of ten using dimes and pennies, tens and ones.	9-7	173-174
N34	Recognize tens and ones in numerals to 100.	9-8	175-176
N35	Count and compare numerals to 100.	9-9	177-178
N36	Order numerals to 100.	9-10	179
N37	Recognize one half.	11-2	203-204
N38	Recognize one fourth.	11-3	205-206
N39	Count by ones to 100.	12-1	221-222
N40	Count by tens to 100.	12-2	223-224
N41	Count by fives to 50.	12-4	227-228
N42	Count by twos to 20.	12-6	231-232

Arithmetic

Arithmetic		Lesson	Pages
A1	Join two sets; recognize and use the symbol +.	3-1	41-42
A2	Recognize and use the symbol = in horizontal addition sentences.	3-2	43-44
A3	Use models to add and write horizontal addition sentences.	3-3	45-46
A4	Draw models for addition sentences to find the sum.	3-4	47-48
A5	Add using vertical form.	3-5	49-50
A6	Add 1 in sums to 10.	3-6	51-52
A7	Add 2 in sums to 10.	3-7	53-54
A8	Add 0, 1, and 2 in sums to 10.	3-8	55-56
A9	Recognize addition names for the numbers 5 to 9 using 0, 1, and 2 as addends.	3-10	59
A10	Interpret subtraction situations and recognize the minus symbol.	4-1	61-62
A11	Record horizontal subtraction sentences for pictured subtraction situations.	4-2	63-64
A12	Interpret and record subtraction sentences for pictured subtraction situations.	4-3	65-66
A13	Subtract using vertical form.	4-4	67-68
A14	Subtract one from numbers to ten and count back from ten to zero.	4-5	69-70
A15	Subtract two from numbers to ten.	4-6	71-72
A16	Subtract zero from numbers to ten.	4-7	73-74
A17	Subtract from numbers up to five.	4-8	75-76
A18	Recognize subtraction names for numbers 1 to 10.	4-10	79
A19	Add to sums of 5.	5-1	81-82
A20	Add to sums of 6.	5-2	83-84
A21	Add to sums of 7.	5-3	85-86
A22	Add to sums of 5, 6, and 7.	5-4	87-88
A23	Subtract from numbers up to 5.	5-6	91-92
A24	Subtract from numbers up to 6.	5-7	93-94
A25	Subtract from numbers up to 7.	5-8	95-96
A26	Subtract from 5, 6, and 7.	5-9	97-98
A27	Add sums to 8.	6-1	101-102
A28	Add sums to 9.	6-2	103-104
A29	Add sums to 7, 8, and 9.	6-3	105-106
A30	Add to sums of 5, 6, 7, 8, and 9.	6-4	107-108
A31	Subtract from 8.	6-5	109-110
A32	Subtract from 9.	6-6	111-112
A33	Subtract from 8 and 9.	6-7	113-114
A34	Subtract from numbers to 9.	6-8	115-116
A35	Add or subtract mixed examples to sums of 9.	6-9	117-118

A36	Add to sums of 10.	7-1	121-122
A37	Subtract from 10.	7-2	123-124
A38	Add, with sums to 10.	10-1	181-182
A39	Add, with sums to 11.	10-2	183-184
A40	Add, with sums to 12.	10-3	185-186
A41	Subtract from minuends to 10.	10-5	189-190
A42	Subtract from minuends to 11.	10-6	191-192
A43	Subtract from minuends to 12.	10-7	193-194
A44	Add or subtract facts and picture problems to sums of 12.	10-9	197-198
A45	Review addition and subtraction facts and word problems with sums to 12.	11-9	217-218
A46	Prepare for multiplication.	12-7	233-234
A47	Introduce the multiplication sign.	12-8	235-236

Measurement

		Lesson	Pages
M1	Recognize and use the symbol ¢; add pennies.	3-9	57-58
M2	Subtract and solve problems involving pennies.	4-9	77-78
M3	Compare lengths: shorter, longer, or the same.	8-5	149-150
M4	Measure length using non-standard units.	8-6	151-152
M5	Measure length using centimetre units.	8-7	153-154
M6	Tell time to the hour.	8-8	155-156
M7	Tell time to the hour.	8-9	157-158
M8	Name the days of the week; fill out dates on a calendar.	8-10	159
M8	Estimate, measure, and compare capacities.	11-4	207-208
M9	Determine equivalent capacities.	11-5	209-210
M10	Compare masses to determine the heavier or lighter object.	11-6	211-212
M11	Mark simple temperature readings.	11-7	213-214
M12	Cover a surface with squares (informally find areas).	11-8	215-216
M13	Count dimes and pennies.	12-3	225-226
M14	Count nickels and pennies.	12-5	229-230
M15	Count with the quarter.	12-9	237-238

Geometry

		Lesson	Pages
G1	Recognize boxes, cans, balls, and cones.	8-1	141-142
G2	Recognize circles and triangles.	8-2	143-144
G3	Recognize squares and rectangles.	8-3	145-146
G4	Recognize faces, edges, and corners.	8-4	147-148
G5	Identify figures that are symmetrical.	11-1	210-202

Graphing

		Lesson	Pages
GR1	Interpret and construct simple graphs (pictograph and bar graph).	2-8	35-36
GR2	Interpret bar graphs.	10-10	199

Problem Solving

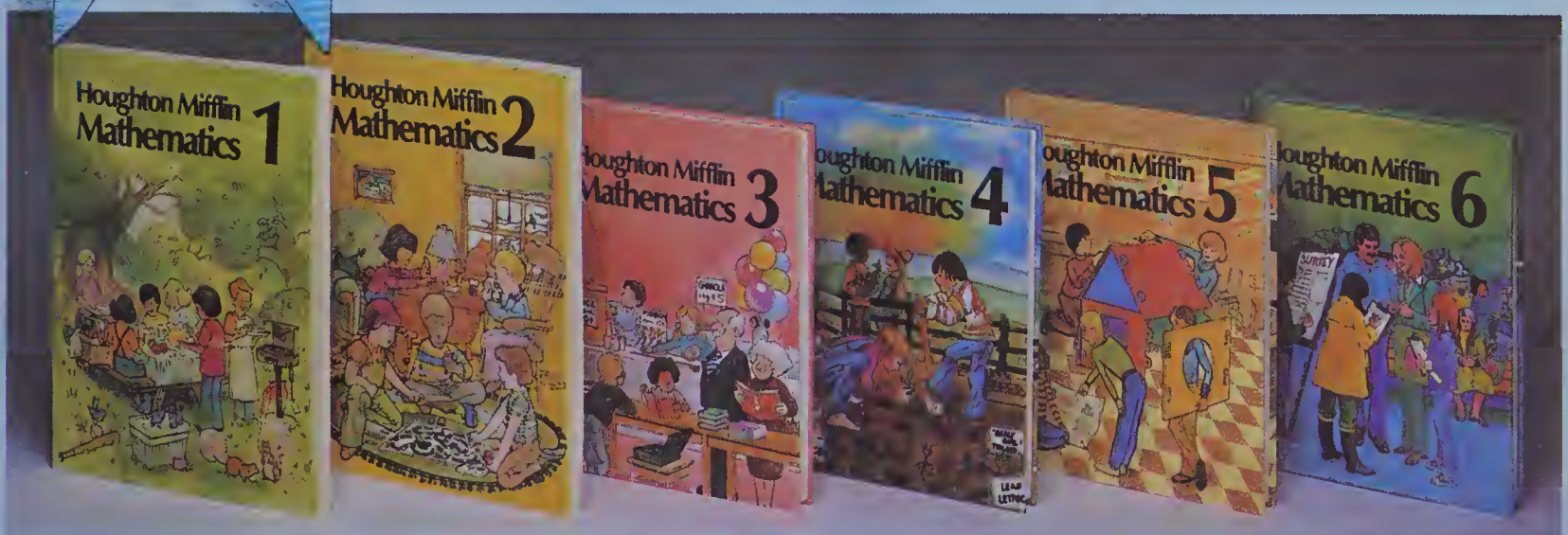
		Lesson	Pages
PS1	Interpret and solve picture problems.	5-5	89-90
PS2	Interpret and solve subtraction picture problems.	5-10	99
PS3	Interpret addition and subtraction picture problems.	6-10	119
PS4	Interpret and illustrate simple word/picture problems.	7-3	125-126
PS5	Solve addition picture problems with sums to 12.	10-4	187-188
PS6	Solve subtraction picture problems with minuends to 12.	10-8	195-196
PS7	Solve addition and subtraction word problems involving money.	11-10	219
PS8	Buy objects to \$1.00.	12-10	239

Mathematics for the 80's

Are these your priorities?

Problem Solving
Real-World Applications
In-Depth Developmental Lessons
One Strand Block Units
Ready-to-Use Teacher's Resource Books
Individualized Learning Materials
Testing and Management Programs
Year-Round Motivational Features

...Then here is your program!



Houghton Mifflin Mathematics

The Student Text and Teacher Resource Book

Student Objectives coded for easy tracking and reviewing.

Vocabulary lists help the teacher check that the students know the words needed for each new lesson.

Materials lists remind the teacher of material they may want to use for this lesson. An asterisk indicates materials available in Houghton Mifflin's K-2 Activity Kit.

Introductory activity emphasizing prerequisite skills, using concrete experiences.

Lesson plan involving both concrete materials and pictorial representation (semi-concrete).

Teacher's Resource Book page number corresponds to pupil's textbook.

UNIT 2 LESSON 5

Objective N15

Recognize and print the numeral 10.

Vocabulary

Birds, eggs
More than 10, less than 10

Materials

T Numeral Cards 0 to 10
Counters: pennies*
Hands placemats

Introducing the Lesson

Ask the children to show fingers to match a given number up to nine, e.g., "Six." Do this orally and with Numeral Cards to 9.

Teaching the Lesson

Ask, "How many fingers in all?" Count to check. Show the Numeral Card for 10. Trace the numeral with the children, saying, "Ten—a one and a zero." Have the children practise tracing one then zero in left-right order in the air. The place-value interpretations are developed later.

Using a hands mat and piles of pennies have the students check the piles to see which ones have ten, less than ten, or more than ten—by trying to place a penny on each finger. "Put one penny on each finger. Are there ten pennies? How many are there?" Eight. "Eight is less than ten. How many more pennies do we need to get ten?" Two. "Good—nine, ten," placing two more pennies on the fingers.

Give each pupil a hands placemat. Flash Numeral Cards as the students build pennies on the fingers of their mat. Each time, count on with pennies to 10.

Have the children turn over their mats and practise grouping their pennies in sets of various sizes. Start with sets of two or three. "Put ten pennies on your mat. Now separate them into groups of two. How many groups of two did you get? Are there any pennies left over?" Repeat.

29

Name _____



How many birds? ?



Five to ten, print 10

twenty-nine 29

Using the Pages

- Since the children have had experiences printing one and zero separately, emphasize the order of printing one and zero and the use of two dots as starting points for tracing the one, then the zero.
- Review the method for the "How many birds ?" exercise on page 29.
- Do a chalkboard example of "Circle sets of 10" at the top of page 30.
- The nests exercise at the bottom of page 30 emphasizes counting on. Ask, "How many eggs are supposed to be in the nest? How many are there already? How many more are needed? Count to check." Less able children may need help with the exercise.

Functional, full colour illustrations.

The Teacher's Resource Book provides black-and-white reproductions of the textbook pages with full answers and annotations.

Description of workbook exercises aids in teaching the skill and diagnosing problems.

Handwriting Practice

Worksheet N15

Pages 29-30

Write the numerals.

6 6 6 6 6 6 6 6 6 6

7 7 7 7 7 7 7 7 7 7

8 8 8 8 8 8 8 8 8 8

9 9 9 9 9 9 9 9 9 9

10 10 10 10 10 10 10 10

Reinforcement

1. Direct the children to trace both of their hands onto paper. Label the fingers from 1 to 10. These hands can be displayed in groups around the room and used for oral counting practice as well as an introduction to counting and grouping by tens.

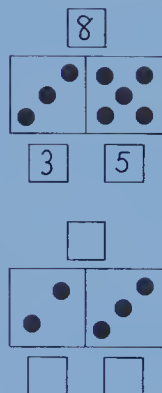


“How many fingers in all?”

2. For additional printing practice of the numerals 6 to 10, provide Acetate Printing Cards and Templates at the Printing Centre.

Enrichment

Using a worksheet of dominoes, ask the students to label how many dots in all, then how many dots on each side.



Provide a real set of dominoes, if possible, as an introduction and follow-up game. Use the regular domino rules.

Problem Solving Activities

Assign Level 1, Unit 2

Reinforcement provides alternative types of practice and ideas for reteaching.

Enrichment in Teacher's Resource Book to keep the gifted child involved.

*Extra Practice Masters
(available separately)
are reproduced here for
every lesson.*

Extra Problem Solving Activities (available separately) for each unit.

Houghton Mifflin Mathematics

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PROBLEM SOLVING

- ☐ Sequenced lessons teach problem solving strategies.
- ☐ The unique IDEA strategy keeps your pupils on track.
- ☐ Problem solving questions in every lesson maintain performance.

REAL-WORLD APPLICATIONS

- ☐ Every unit is developed through a real-world theme.
- ☐ Lessons are introduced by a real-world problem.
- ☐ Exercises include real-world applications.

IN-DEPTH DEVELOPMENTAL LESSONS

- ☐ Each lesson is devoted to a single objective.
- ☐ Skills are based upon understanding, using concrete materials.
- ☐ Developmental exercises make objectives easy to learn.

ONE STRAND BLOCK UNITS

- ☐ Each unit is devoted to the development of one strand.
- ☐ Each unit provides thorough practice for objectives.
- ☐ Each unit reviews, tests, and reinforces objectives.

READY-TO-USE TEACHER'S RESOURCE BOOKS

- ☐ The Resource Book contains detailed lesson plans.
- ☐ The Resource Book provides both reinforcement and enrichment activities.
- ☐ The Resource Book has complete answers to exercises and practice.

INDIVIDUALIZED LEARNING MATERIALS

- ☐ Every unit provides Pre-tests and Post-tests for readiness and assessment.
- ☐ Every unit has provisions for remediation and enrichment.
- ☐ Every unit has built-in reviews and cumulative reviews

TESTING AND MANAGEMENT PROGRAMS

- ☐ The textbook has unit tests and cumulative tests.
- ☐ The Resource Book contains extra practice and evaluation material.
- ☐ The Resource Book uses coded objectives to establish a diagnostic system.

YEAR-ROUND MOTIVATIONAL FEATURES

- ☐ Every lesson has functional and appealing artwork.
- ☐ Every lesson has a challenging "Something Extra" including calculator activities and computer literacy.
- ☐ Every unit has an interesting child-oriented theme.

Book 1
1-98001
1-98011
1-98021
1-98031

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Teacher's Resource Book
Testing and Practice Masters
Problem Solving Activities

Book 2
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Teacher's Resource Book
Testing and Practice Masters
Problem Solving Activities

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Canada Limited**

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(416) 475-1755**

Scope & Sequence

1

2

3

NUMERATION

Read and write numerals to 10/
1-40
Read and write numerals to 20/
127-140
Read and write numerals to 100/
161-180
Compare and order/11-18, 31-34,
37-38, 131-140, 169-170, 177-178
Read and write amounts of
money/57-58, 77-78, 165-166,
173-174, 223, 225-226, 228-230,
237-240
Fractions: halves and fourths/
203-206
Extra Practice/241, 242, 247, 249

Read and write numerals to 20/
1-20
Read and write numerals to 100/
45-66
Read and write numerals to 999/
109-128
Compare and order/11-14, 53-54,
59-60, 113-114
Read and write amounts of
money/15-16, 65, 121-126,
223-224
Ordinal numbers/61-62
Round to the nearest 10/63-64
Fractions: halves, fourths, thirds,
and tenths/213-218
Decimal notation/219-220
Regrouping/195-196, 204-205
Extra Practice/253, 255, 258, 263

Two-digit numerals/2-3, 41
Three-digit numerals/42-58
Decimal notation/262-265, 272-
275
Compare using $<$ and $>$ /48-49,
266-267
Read and write amounts of
money/52-53, 276-277
Ordinal numbers/32-33
Round to the nearest 10 and 100/
172-173
Roman numerals/288-289
Four-digit numerals/56-57
Numeration and the metric sys-
tem/28-29, 50-51, 68-69, 274-275
Fractions/252-257, 261
Extra Practice/299, 301, 302-307

MEASUREMENT

Time/155-160
hours/155-158
days/159
Length/149-154
centimetre/153-154
Area/215-216
Capacity/207-210
Mass/211-212
Temperature/213
degrees Celsius/213
Money/57-58, 77-78, 165-166, 173-
174, 219, 225-226, 228-230, 232,
237-240
pennies/57-58, 77-78
dimes/165-166
nickels/228-230
quarters/237-239
Extra Practice/244, 249, 252

Time/159-168, 221-222, 231
hours/159
minutes/163
days/165
months/165
Length/149-156, 231
centimetre/151-154
metre/155-156
Area/101-102
Capacity/229-231
litre/230
Mass/225-228, 231
kilogram/227-228
Temperature/157-158, 167, 231
degree Celsius/157-158
Measuring instruments/231
Money/15-16, 46-48, 55, 57, 59,
64-66, 121-128, 134, 138, 141-
142, 223-224
pennies/15-16
dimes/15-16, 46
dollars/65
nickels/121
quarters/122
Extra Practice/253, 258, 260, 263

Time/110-118
Length/6-7, 14-15, 28-29, 50-51,
68-69, 76-77, 101, 107, 274-275
centimetre/6-7
decimetre/28-29
metre/50-51
kilometre/68-69
Perimeter/14-15, 76-77
Area/234-238
square centimetre/234-237
Volume/282-286
cubic centimetre/284-285
Capacity/268-269
litre/268-269
millilitre/269
Mass/102-105
kilogram/102-105
gram/102-105
Temperature/108-109
Measuring instruments/105, 286
Money/2-3, 24, 41, 52-54, 122,
168-169, 171, 176-177, 192-193,
276-277
Extra Practice/79, 99, 139, 239, 301,
302, 304-305, 307

ARITHMETIC

Addition:

Introducing '+' sign/41
 Basic facts to 5/41-60, 81-82
 Basic facts to 7/81-88
 Basic facts to 9/101-108
 Basic facts to 10/121-122
 Basic facts to 12/181-186, 197-198
 Vertical form/49-50
 Adding zero/55
 Adding one/51-52
 Adding two/53-55
 Money/57-58, 219
 Extra Practice/243, 245, 246, 247, 250, 253, 256

Basic facts to 9/21-30, 41-44
 Basic facts to 12/67-74, 81-88, 169
 Basic facts to 18/171-192, 194
 Doubles, doubles plus one/187-188
 Two and three digits without regrouping/129-131, 141, 143-144, 193
 Two digits with regrouping/195-201, 211
 Adding one/11
 Adding ten/55
 Related facts/81-83
 Three addends/73-74
 Extra Practice/254, 256, 259, 261, 262

Basic facts/1, 4-5, 8-13, 61
 Three-addends/12-13, 74-75, 168-171
 Two digits without regrouping/62-63
 Regrouping ones/64-67, 161-163
 Regrouping tens/70-71, 161, 164-165
 Regrouping twice/72-73, 161, 166-167
 Relating to subtraction/94-95
 Estimation/174-175
 Regrouping hundreds/173
 Decimals/270-271
 Money/276
 Extra Practice/39, 99, 199, 299, 302-305, 308, 310

Subtraction:

Introducing '-' sign/61
 Basic facts to 5/61-80, 91-92
 Basic facts to 7/91-98
 Basic facts to 9/109-118
 Basic facts to 10/123-124
 Basic facts to 12/189-194
 Vertical form/67-68
 Subtracting zero/73-74
 Subtracting one/69-70
 Subtracting two/71-72
 Money/77-78, 219
 Extra Practice/244, 245, 246, 247, 250, 254, 256

Basic facts to 9/31-34
 Basic facts to 12/75-88, 170
 Basic facts to 18/173-192, 203
 Two and three digits without regrouping/135-142, 145-146, 193
 Two digits with regrouping/204-212
 Subtracting one/12
 Subtracting ten/56
 Related facts/81-83
 Extra Practice/254, 256, 259, 261, 262

Basic facts/21-38, 81
 Related facts/22-23
 Subtracting 1 and 10/24-25
 Doubles/26-27
 Subtracting 9/26-27
 Two digits without regrouping/82-83
 Two digits with regrouping/84-87, 90-95, 181
 Checking by addition/94-95
 Three digits with regrouping/182-187, 190-195
 Zero in the tens place/190-191
 Money/192-193, 276
 Decimals/270-271
 Extra Practice/59, 119, 239, 299, 302-305, 308, 311

Multiplication:

Skip counting by tens/223-224
 Skip counting by fives/227-228
 Skip counting by twos/231-232
 Multiply by 2/233-236
 Introduce 'x' sign/235-236
 Extra Practice/252

Skip counting by twos/233-234
 Multiplying by 2/235-236
 Skip counting by fives/119-120
 Multiplying by 5/237-238
 Skip counting by threes and
 fours/ 239-240
 Multiplying by 3/241-242
 Multiplying by 4/243-244
 Multiplying by 1/245
 Extra practice/264

Basic facts 2 to 5/130-138, 221-223
 Basic facts 6 to 9/224-233
 Skip counting/122-123
 Introducing multiplication with
 addition/124-125
 Order property/126-127
 Zero and one in multiplication/
 124-125
 Vertical form/222-223
 Multiplying by 10 and 100/
 290-291
 Multiplying a 2-digit number/
 292-297
 Extra Practice/159, 259, 304, 306-
 307, 309

Division:

Counting groups/247-252
 Introduce ' \div ' sign/249-250
 Extra Practice/264

Basic facts 2 to 5/146-153, 241-243
 Basic facts 6 to 9/246-251
 Counting groups/142-143
 Related multiplication/144-145
 Zero and one/154-155
 Vertical form/242-243
 Remainders/244-245
 Extra Practice/179, 279, 304, 307,
 309

GEOMETRY

Rectangular solids (boxes)/141
 Cylinders (cans)/141
 Spheres (balls)/142
 Cones/142
 Triangles/143-144
 Circles/143-144
 Rectangles/145-146, 215-216
 squares/145-146, 215-216
 Faces/147-148
 Edges/148
 Vertices (corners)/148
 Symmetry/201-204
 Extra Practice/248, 251

Solids/93-100
 cubes/95-100
 nets/98
 Plane figures/89-92
 Congruent figures (twins)/190
 Patterns/92, 94
 Sorting and classifying/96-97, 100, 104
 Faces, edges, and vertices (corners)/99-100
 Tessellations/101-102
 Similar figures/103
 Symmetry/105-107
 Extra Practice/257

Solids/204-210, 282-285
 pyramid/204
 prism/204
 nets/207
 Plane figures/14-15, 76-77, 88-89, 91, 188-189, 196-197, 201-203, 234-237, 252-255
 Points/202-203
 Segments/202-203
 Faces/206-207
 Edges and vertices (corners)/208-209
 Congruence and similarity/83, 210-211
 Slides/214-215
 Enlargements/215
 Symmetry/188-189, 196-197, 201
 line of symmetry/196-197, 201
 Sorting and classifying/88-89, 209, 216-217
 Tessellations/211
 Patterns/55, 65
 Paper folding/85
 Extra Practice/300, 306

GRAPHS

Locating information/8, 35-36, 207, 239
 Pictographs/35, 57
 Bar graphs/17-18, 36, 199, 213

Locate information/7-8
 Pictographs/19, 147
 Bar graphs/17-18, 157, 167

Locate information/16-17, 54
 Pictographs/228-229
 Bar graphs/106-107
 Ordered pairs/212-215

PROBLEM SOLVING

Interpret addition problems from pictures/15-16, 41-44, 89

Interpret subtraction problems from pictures/33-34, 61-64, 77-78, 99, 195

Interpret addition and subtraction problems from pictures/119, 187

Interpret addition and subtraction problems from words and pictures/90, 112, 125-126

Draw a picture to solve addition and subtraction word problems/90, 125, 182, 188, 196

Locate information to solve problems/8, 35-36, 187, 199, 207, 232

Add or subtract in word problems/198, 218, 219

Solve problems involving money/77-78, 219, 239

Interpret multiplication and division problems from pictures/233-236

Interpret addition problems from pictures/21, 23, 25-29, 69, 71, 73

Interpret subtraction problems from pictures/31-33, 38-39, 75, 79

Interpret addition and subtraction problems from pictures/41, 43, 78, 81

Interpret addition and subtraction problems from words and pictures/86, 210

Draw a picture to solve addition and subtraction word problems/26, 38, 42

Locate information to solve problems/7-8, 17-19, 61, 64, 123, 127, 141, 167, 246

Add or subtract in word problems/30, 40, 86, 124, 141, 190-191

Solve problems involving money/123-124, 127, 141, 224, 246

Interpret multiplication and division problems from pictures/235, 237, 241-245, 247-251

Solve measurement problems/167, 222

Make estimates/153-156, 227-230

Interpret and continue patterns/92, 94, 233

Guess and test/102-103

Sort and classify/96, 104

Solve multiplication and division word problems/246, 248

Interpret addition and subtraction problems from words and pictures/36

Draw a picture to solve addition and subtraction word problems/37, 129

Locate information to solve problems/17, 54, 97, 106-107, 109, 205, 228-229

Add or subtract in word problems/96-97, 187

Solve problems involving money/54, 176-177, 193, 247, 276-277

Interpret multiplication and division problems from pictures/124-125, 142-143

Solve measurement problems/114-115, 183, 283

Make estimates/111, 113, 114, 175

Interpret and continue patterns/5, 18, 45, 65, 75, 277

Guess and test/67, 177, 207, 247

Sort and classify/216

Solve multiplication and division word problems/123, 145, 243, 245, 251

Solve addition, subtraction, multiplication, and division word problems/128-129, 156-157, 219, 271, 287

Summarize information in a list, report, or chart/175, 216-217, 263

Interpret or draw diagrams to solve word problems/27, 51, 153, 157, 213, 225, 231

Work with a model/85, 115, 203, 207, 263, 283

Interpret flow charts/96, 195

Solve problems involving extraneous information/16-17, 91, 97, 129, 219

Calculate mentally/176

Solve two-step problems/95, 194, 205, 219, 235

UNIT 1

Numerals 0 to 5

Theme: Toys

Lesson	Objective		Pages
1	N1	Recognize and print the numerals 1 and 2.	1-2
2	N2	Recognize and print the numerals 3 and 4.	3-4
3	N3	Review sets and the numerals 1 to 4.	5-6
4	N4	Recognize and print the numeral 5.	7-8
5	N5	Recognize and print the numeral 0.	9-10
6	N6	Identify equivalent sets through matching and one-to-one counting.	11-12
7	N7	Identify a set greater than another.	13-14
8	N8	Recognize and construct a set with one more than another set.	15-16
9	N9	Order sets and the numerals 0 to 5.	17-18
10	N10	Recognize the numerals 0 to 5 and count to 5.	19
Test		Numerals 0 to 5	20

Vocabulary

zero
one
two
three
four
five
any
one more
some
all
none

nothing
empty
group
set
bunch
cents
the same
number of
as many as
more
less, least

fewer, fewest
is equal to
more than
greater than
most
greatest
first
last

Printed Directions:

How many?
Circle groups of...
Colour.
How many birds in each cage?
Draw...
Circle sets that match.
Which set has more?
Draw one more.
Join the dots in order.
Count the dots.
Colour by number.

Materials

Numeral Cards for Teacher: 6 cards
approximately 12 cm × 15 cm

Numeral Cards for Pupil*: 6 cards
approximately 6 cm × 9 cm



Picture Set Cards for Teacher: 6 cards
approximately 12 cm × 15 cm



Picture Set Cards for Pupils: 6 cards
approximately 6 cm × 9 cm

Dot Pattern Cards: approximately 14 cm × 14 cm



geometric*

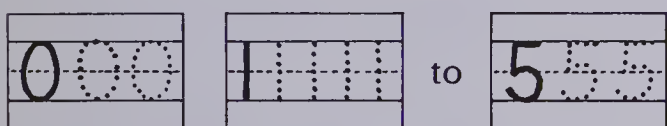


scattered

Word Cards: **zero** to **five**

Price Tag Cards: **1¢** to **5¢**

Acetate Numeral Practice Cards:



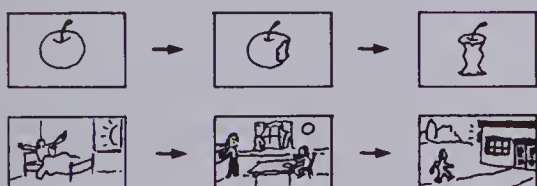
Numeral Tracing Templates:



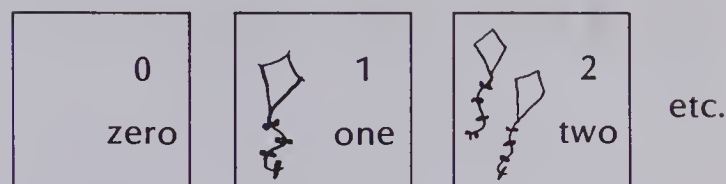
Geometric Templates:



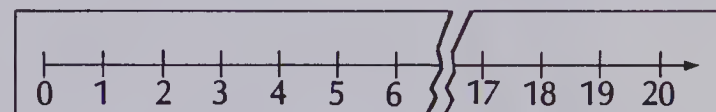
Picture Sequence Cards:



Numeral Reference Chart from 0 to 10:



Number Line from 0 to 20.



Counters:

blocks	dried lima	shells
bingo chips*	beans	nuts
buttons	peanuts	bolts
macaroni	chestnuts	sticks
crayons	blank dice	dishes,
pencils	feltboard	shatterproof
paste	felt cutouts	cutlery,
paint	catalogs	plastic
paint brushes	Plasticene	paper plates
egg cartons	pennies*	magazines
scissors	paper clips	small toys
graph paper*	clothespins	unlined paper

centimetre rods* (or Cuisenaire rods);
interlocking cubes (Unifix, Multilink,
Centicubes*); small containers, e.g., boxes,
penny banks; musical instruments, e.g.,
drum, bell, tambourine; pairs of objects,
e.g., shoes, mittens

*Available in Houghton Mifflin K-2 Activity Kit.

About This Unit

Unit 1 emphasizes the association of the printed numerals 0 to 5 with previously acquired number concepts. The unit is designed for children who have been exposed to a kindergarten or readiness program. Such a program should have included experience with matching and classifying objects on the basis of such attributes as colour, size, shape, and so on, as a prerequisite to matching sets on the basis of number. Previous experience also should have included comparing and ordering objects on the basis of such attributes as length or size as a prerequisite to comparing and ordering on the basis of number.

A wide variety of counting experiences should have been provided to ensure the student's ability to rote count to ten (minimum), to count a set of up to 10 objects with accuracy, to build a set of up to 10 objects as directed, to match objects in one-to-one correspondence, and to count or match objects to determine the equality or inequality of sets.

These concepts, once established at the concrete level of understanding through experience with materials, are developed at more abstract levels (pictorial or iconic, and symbolic) on the pupil pages of Unit 1 through the use of illustrations and numerals. The lessons which *precede* the use of pupil pages use a great variety of materials to help the student make the transition to more abstract levels of understanding. This unit, and the book in general, is organized on the premise that children should have considerable concrete and verbal experience with number concepts before these are introduced symbolically as pictures and numerals.

Another premise of this program is that children require repeated exposure to major concepts and vocabulary over a period of time (not merely in one lesson) in order to integrate the new concepts and language. As a prerequisite to Unit 1, children should have had considerable exposure to mathematical vocabulary, that is, to such vocabulary of comparison as: same, different, big, little; to such vocabulary of quantity as: some, all, more, a few; and to such vocabulary of direction or position as: on, under, above, top, and so on. The prerequisite vocabulary is reinforced and extended throughout the program.

In keeping with the 'repeated exposure' premise, new material (concepts and vocabulary) is introduced in lessons well before it appears on pupil pages, and it is reinforced over a period of time as part of a series of lessons. For example, oral counting skills in Unit 1 are developed well beyond 10, even though the unit deals only with number and numerals to 5. By the time pupils reach Unit 2 they will have had several weeks of oral-concrete work as preparation for the numerals to 10.

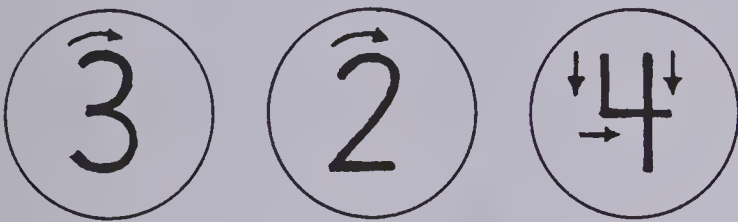
Similarly, in preparation for the formal introduction of addition (Unit 3) and of subtraction (Unit 4) the first two units provide oral and concrete experience with joining and separating and with set-subset relationships. Thus, the student receives intuitive preparation for symbolic work with addition and subtraction.

The teacher's instructions frequently refer to a variety of counting skills. By *rote counting* is meant the oral recitation of number names in sequence. The ability to recite this sequence does not necessarily mean the child has a true understanding of number and of meaningful counting.

Activity Centre

Organize a Numeral Printing Centre. Have available in one area of your classroom the following materials.

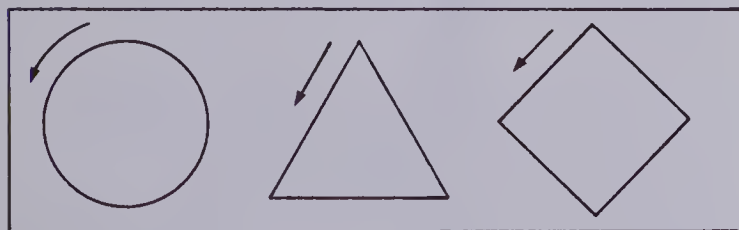
- unlined and lined paper
- pencils
- Plasticene for modelling numerals
- pieces of screen approximately 20 cm × 20 cm for use *under* newsprint as numerals are traced with crayon. Tape the edges with masking tape for safety. The screen increases the kinesthetic or multi-sensory input to establish motor patterns.
- felt or sandpaper numerals for tracing. Glue these to a stiff card.
- rice or sand in a box for tracing
- magic slates or novelty pads for practising
- templates for practising basic shapes and numeral patterns. These can be made from plastic lids or a stiff card and cut out with an X-acto knife.



- acetate numeral practice cards with erasable crayon and a cloth



- dotted numeral patterns on worksheets
- geometric templates of basic shapes for the counter-clockwise practice needed for printing zero

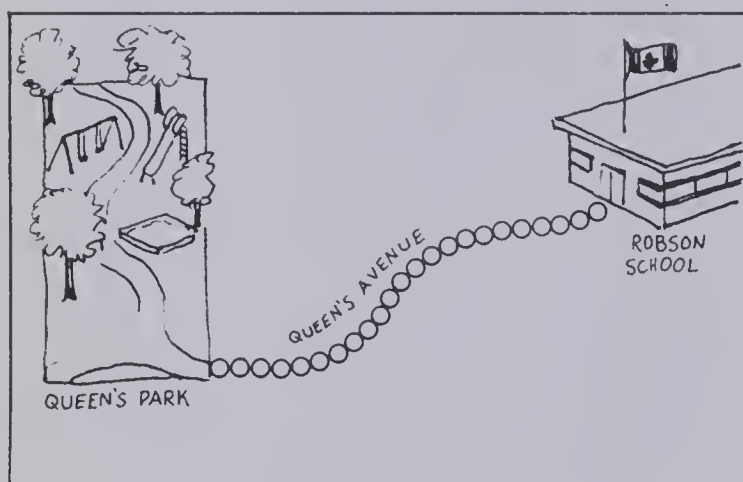


The following activities are suggested for the printing centre.

1. To begin, have the students work on a large scale. Ask that they use exaggerated arm movements to develop their motor patterns for each numeral.
2. Have the students practise the motor pattern with a finger (not a pencil) in the air, on the desk, and on their palms or legs, using large arm movements.
3. Play “guess the numeral” by making the shape with “invisible chalk” against the chalkboard or on the child’s back.
4. Use large sheets of newsprint without lines for their first printing attempts. Gradually work toward using lines (bottom, then top and bottom) and toward printing smaller.
5. Introduce the starting dot and direction arrow that are used in the workbook. Use the chalkboard or chart paper. Ensure that they understand that they always start at the dot and go in the direction of the arrow. Numerals formed using more than one continuous stroke have *numbered* arrows to indicate the stroke sequence.
6. Verbalize the motor pattern for each numeral as an aid to recall. Encourage children to do the same. For the numeral 2 say, “Start at the top, go around, down, and over.”
7. Try to observe each student’s formation of the numeral when it is introduced to ensure that the correct pattern is being established.
8. Use the Reinforcement suggestions given in each lesson for children who require more structured practice with numeral formation.

Ideas

1. With a large sheet of stiff paper, make a map game board of the area near the school. Start with one street that joins the school to another familiar spot—park, library, store, etc. Attach a row of gummed circles or squares to make a street between the two. The board can be used for two or four children at a time. Use a die marked with the numerals 0 to 5 (after they have been introduced). Each player in turn moves a marker the number of spaces indicated by his/her roll. The first player to reach the school is the winner.

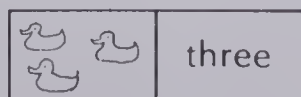


Gradually add to the map other familiar landmarks the children would pass along the route. More streets can be added, providing a variety of possible routes to take during a game. For example, "I'll go from the park to the school and you go from the firehall to the school."

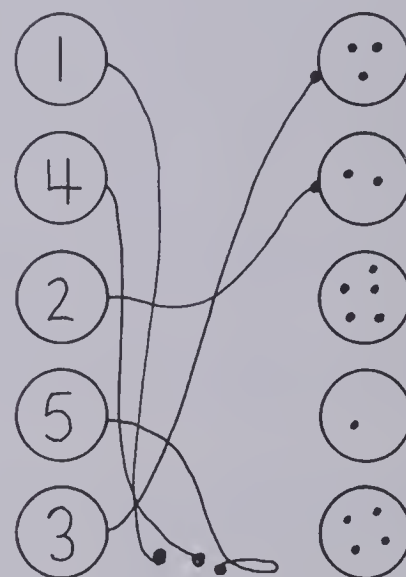
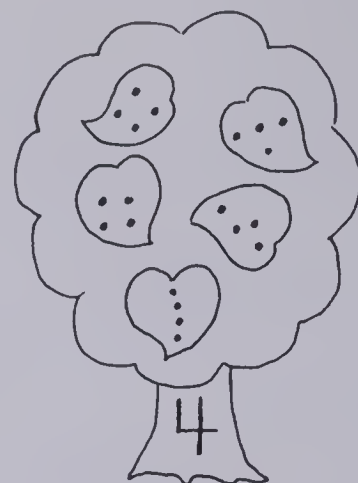
The sticker-paths also can be used for oral counting practice. "How many stickers are there between the park and the school? Let's count."

Later, this open-ended board game can be used to reinforce new skills (addition facts).

2. The Numeral Cards, Picture Cards, Dot Cards, and Word Cards can be used for a variety of matching games, e.g.,



Other matching games can easily be made to reinforce number to numeral associations.



3. Display a large calendar for the month. Use it daily in oral lessons to develop the children's vocabulary of time and of sequence: before, after, between, counting, ordering, days, weeks, months, etc.
4. Collect "things" to use for counting, matching, sorting, classifying, and ordering.

Label boxes and encourage children to bring "things" from home to add to the collections. Some collectables are:

buttons	nuts	fabric
chestnuts	seeds	old jewellery
stones	leaves	bread tags
shells	ribbons	bottle caps

Plastic margarine tubs are useful containers to hold individual sets of counters, numeral cards, or whatever.

Name _____

Pretest

Unit 1

How many?



2 3 4



1 2 3



3 4 5



2 3 4



3 4 5



1 2 3

Draw a set with one more.



1 2



4 5



3 4



2 3

Name _____

Post-test

Unit 1

Print the numeral.



2



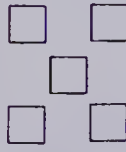
4



3



1



5



3



2

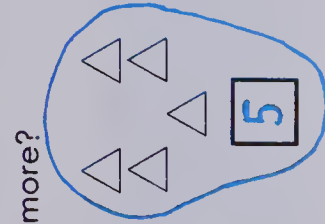


5

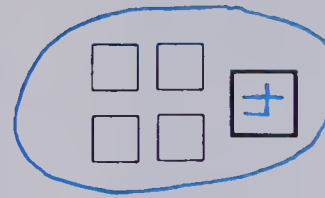
Which set has more?



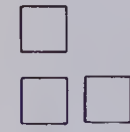
4



5



4



3

Colour.



3



4



UNIT 1 LESSON 1

Objective N1

Recognize and print the numerals 1 and 2.

Vocabulary

one, two, group, set, bunch

Names of toys: top, kite, wagon, doll, etc. and their plurals

Direction words: How many?

Materials

Counters* (blocks, etc.)

Musical instruments (bell, drum, etc.)

Pairs of objects (shoes, mittens, etc.)

T (teacher) and P (pupil)* Numeral

Cards for 1 and 2

Introducing the Lesson

The lesson involves three parts: a review of oral counting games and related vocabulary; the introduction of the numerals 1 and 2; and playing games again, but using numerals.

Call out numbers 1 to 5 while the students build sets of these sizes using counters.

Ask the students to take turns sounding an instrument, e.g., ring a bell four times, while the other children count aloud and say which instrument they have heard.

Review the parts of the body by calling out, "Hands," "Ears," "Toes," and so on. The children point to the part and say how many they have, e.g., "Elbows!" Two.

Review plurals using pairs of objects. One shoe. Two shoes.

Teaching the Lesson

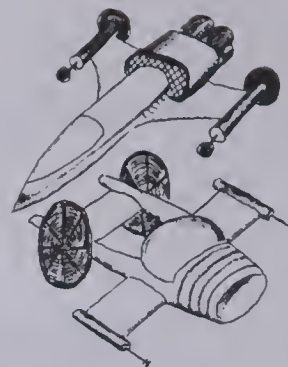
Using your Numeral Cards (T), show 1 and 2. Have the children trace over the shapes with you—in the air, on the floor, on their hands, and so on.

Repeat the counting games (objects, instruments, body parts) using T and P Numeral Cards:

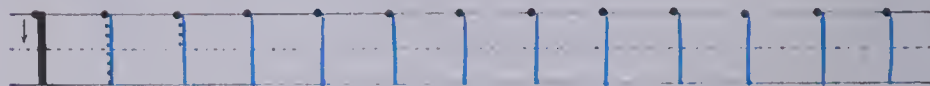
"Show me this many blocks: [2]." "How many shoes?" Pupils show [2]. "How many bell rings?" [1]. "How many ears?" Pupils show [2]. "Ring the bell this many times: [2]."



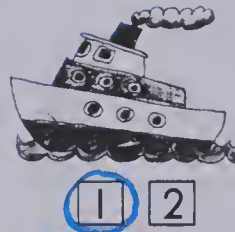
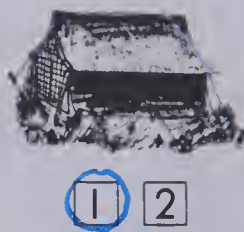
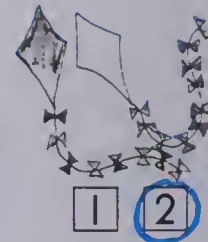
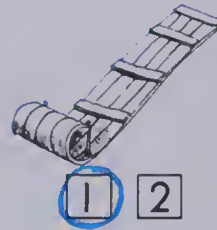
one



two



How many?



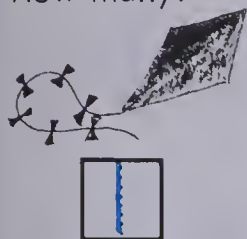
One and two; print 1 and 2

one 1

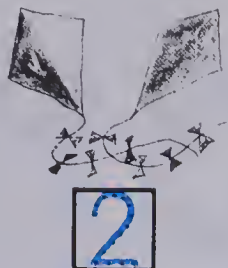
Using the Pages

- See the suggestions in the Unit *Introduction* for beginning numeral printing practice. Pupils should be introduced to the starting dot and direction arrow before seeing page 1.
- Encourage the children to verbalize the motor pattern for each numeral: for 2, "Around, down, and over." You may want to point out the special direction for 2 (and 3) since they are formed in a clockwise direction, while most rounded letters (c, a, g, d, s, f, ...) are shaped counter-clockwise on the first stroke.
- Ask the students to complete the printing of 1 and 2 at the top of page 1 while you check their numeral formation. Encourage them to find their "best" example.
- Print the direction, "How many?", on the chalkboard. Read it with the students and provide board examples similar to the exercises on page 1 (circling 1 or 2 and page 2 (printing 1 or 2).

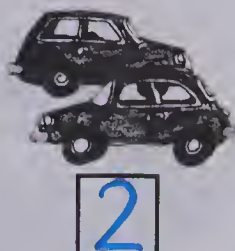
How many?



1



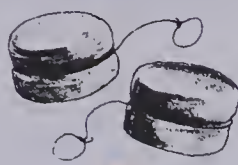
2



2



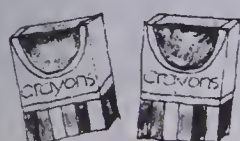
1



2



1



2



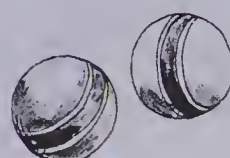
1



2



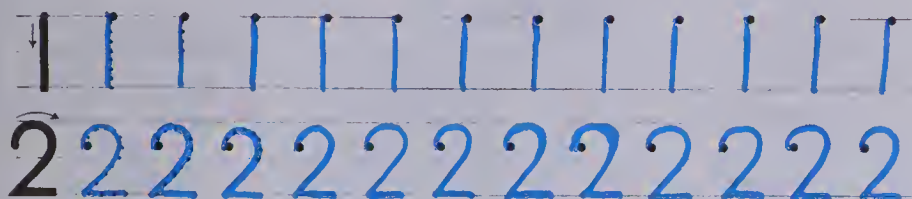
1



2



2

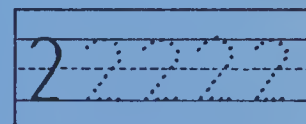


2 two

One and two; print 1 and 2

Reinforcement

1. At the Numeral Printing Centre provide laminated acetate Numeral Practice Cards for 1 and 2, as explained in the Unit *Introduction*, and erasable crayons or felt markers.



2. Provide numeral tracing templates in the shapes of 1 and 2 at the printing centre. Use plastic lids or stiff card cut with an X-acto knife.



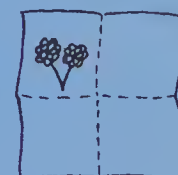
3. This activity reinforces the lesson objective and develops the child's ability to follow oral directions. It reinforces the vocabulary of position (see Unit *Introduction*), and prepares children to follow printed directions later on.

Provide each child with crayons, a pencil, and a sheet of blank paper. Explain how to fold the paper in four. Draw an example of the fold lines on the chalkboard. Print the following directions on the board. "Draw two flowers. 🌻 🌻" Read the direction with the children, help them to find the top left box on their papers, and have them draw the two flowers. Follow the same procedure for:

Draw 1 cat.

Draw 2 balloons.

Draw 1 house.



Continue the activity with any appropriate sight vocabulary.

Enrichment

Make lists (using words or pictures) of things that usually come in ones and of things that come in twos (pairs).

one
nose
scarf

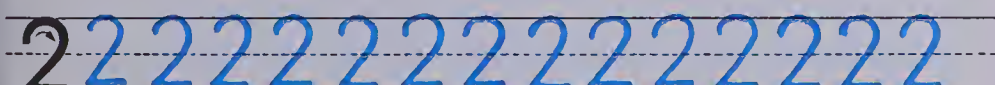
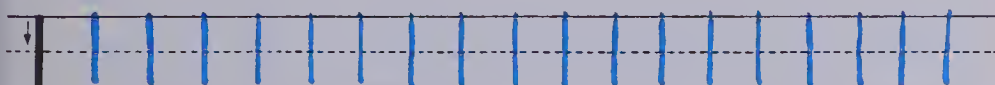
two
ears
mittens

Extra Practice

Worksheet N1

Pages 1-2

Print 1 and 2.



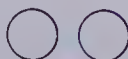
How many?



2



1



2



2



1

Objective N2

Recognize and print the numerals 3 and 4.

Vocabulary

Toys and sports equipment: balls, tennis racquets, whistles, ski poles, etc.

Direction words: Circle groups of...

Materials

Counters (bingo chips*)

T and P Numeral Cards* for 1, 2, 3, and 4

Picture Set Cards 0 to 4

Feltboard and felt cutouts

Introducing the Lesson

Have the students take turns building sets of counters and counting how many.

Hold up fingers or show sets of objects from 0 to 10. Ask the children to count out matching numbers of counters.

Snap or clap 1 to 6 times; the students call the number or build the matching set.

Teaching the Lesson

Introduce the numeral 3. Ask the children to trace the numeral as you do with their eyes open and then with them closed.

Give out P Numeral Cards 1, 2, and 3. Try the "Introducing the Lesson" activities using numeral cards: Hold up 3. Say, "Clap this number of times." Show the students three objects. They hold up 3. Introduce the numeral 4. Give out P Numeral 4 Cards, and do familiar activities using all four numerals.

Using the feltboard or Picture Set Cards, let the children take turns building or finding sets to 4 and then matching the Numeral Card to the set.



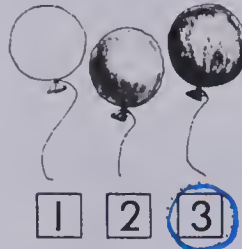
3

three

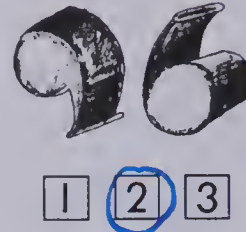
3 3 3 3 3

3 3 3 3 3

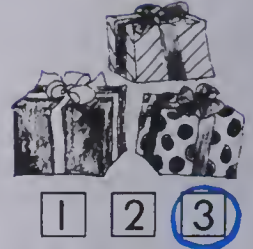
How many?



1 2 3



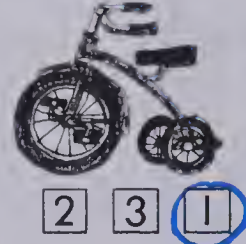
1 2 3



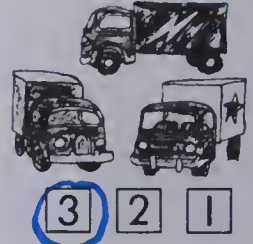
1 2 3



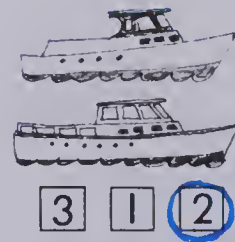
1 2 3



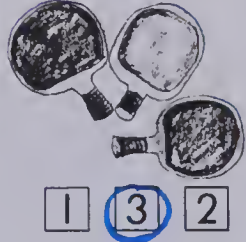
2 3 1



3 2 1



3 1 2



1 3 2



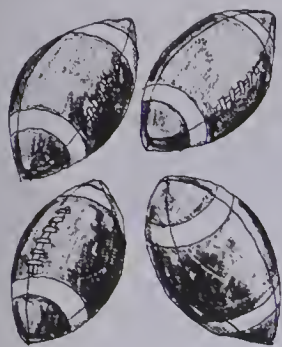
2 1 3

One, two, and three; print 3

three 3

Using the Pages

- Review the formation of 1 and 2, and the purposes of the starting dot and direction arrow.
- Introduce the tracing pattern for 3 with a verbal pattern such as, "Around and around again."
- Associate the first motion for 3 with 2. They both start the same way. Check the students as they print at the top of page 3.
- Review the direction "How many?" using a chalkboard example.
- Introduce the formation of the numeral 4 and a verbal pattern such as, "Down, over, and down again." As the students print 4s at the top of page 4, check their work.
- On the chalkboard print the directions, "Circle groups of 4". Draw sets of 2, 3, and 4. Read the directions with the students. Ask them to explain and demonstrate what to do. Ask them to complete the page as directed.

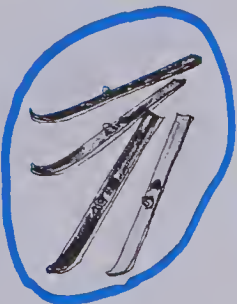
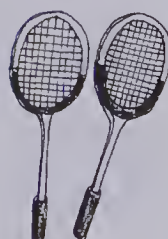
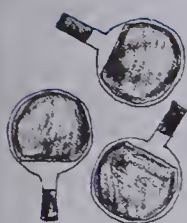
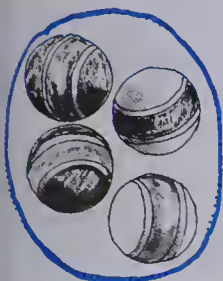


4

four



Circle groups of 4.



4 four

One, two, three, and four; print 4

Reinforcement

1. Encourage the children to use the various tracing materials at the classroom Numeral Printing Centre for additional printing practice.

2. This listening activity requires a pencil, paper, and crayons for each student. It reinforces numbers 1 to 4 and is further preparation for the following of printed directions that is required later.

Slowly and clearly give oral directions such as the following.

"Print your name at the top of the page.

Draw a big house on the page.

Draw some grass in front of the house.

Draw 1 door on the house.

Draw 3 windows on the house.

Draw 2 chimneys on the roof of the house.

Draw 4 flowers growing in the grass."

Simplify or expand on the directions as seems best for your students. Check the pupils' grasp of the vocabulary of position as well as their ability to draw a given number of objects.

Enrichment

Provide four pieces of chart paper. Label them 1, 2, 3, and 4. Have the students record words of that number of letters from their reading vocabulary.

1
a

2
is at
in

3
fit cat
hat

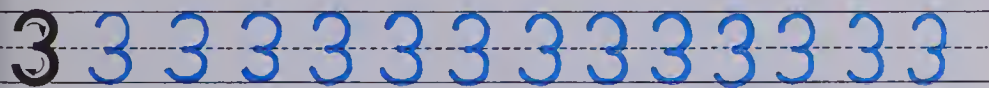
4
jump
slip

Extra Practice

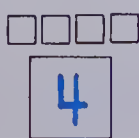
Worksheet N2

Pages 3-4

Print 3 and 4.



How many?



Objective N3

Review sets and the numerals 1 to 4.

Vocabulary

More, one more, some, all, cents

Direction words: Colour...

Materials

Counters (pennies*)

Bank or box

Price Tag Cards: 1¢ 2¢ 3¢ 4¢

Objects from home and classroom

Dice with faces 1, 2, 3, 3, 4, 4

Crayons

Introducing the Lesson

Give the pupils each five to ten pennies. Direct them to take turns shaking a handful, guessing how many, and counting to check.

Use a bank and pennies to count up and back, putting in and taking out to ten. Children listen and count as well as watch and count. Emphasize the pattern “__and one more is__.”

Ask the children to select an object and its price tag while others show how many pennies they need to pay for it. Practise the oral reading of “¢” as “cents.” 2¢, 4¢,...

Pass a die around a circle. Each student takes a turn rolling and reading the numeral, while others show that many fingers or pennies.

Teaching the Lesson

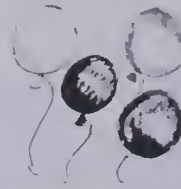
Review numeral patterns with the children. Make an invisible numeral on the chalkboard; they are to guess which it is. Trace a numeral on a student's back; he or she guesses which numeral has been made.



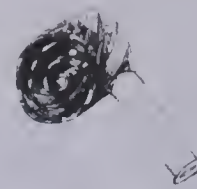
How many?



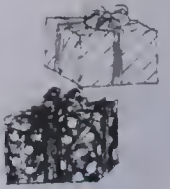
3



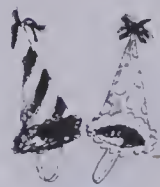
4



1



2



2



3



4



3



1



3



1



4

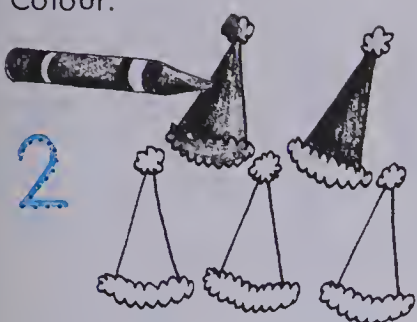
One to four

five 5

Using the Pages

- Have the children count the candles on each cake at the top of page 5. Ask them to trace the numerals.
- Review “How many?”
- Introduce the page 6 direction “Colour.” Demonstrate that they should colour **only** as many as the numeral in each box tells them. “Should you colour all the hats?” No. “How many, then?” Two.
- For the bottom of page 6, review the printing of numerals using a big dot each time you start.
- Direct the students to draw candles on the cakes. A numeral on each cake shows how many.

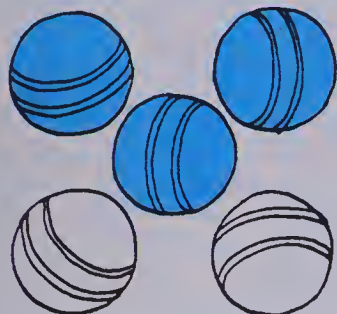
Colour.



4



3



1



4 4 4 4 4 4



3 3 3 3 3 3



2 2 2 2 2 2



1 1 1 1 1 1

6 six

One to four

Extra Practice

Worksheet N3

Pages 5-6

Print the numeral. Colour.

2

2



4

4



1

1



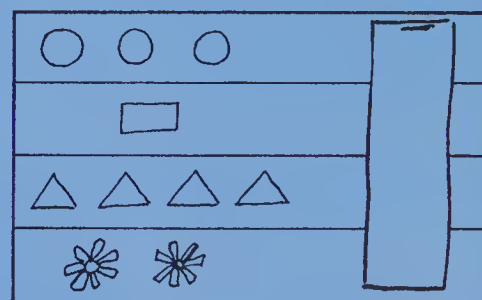
3

3



Reinforcement

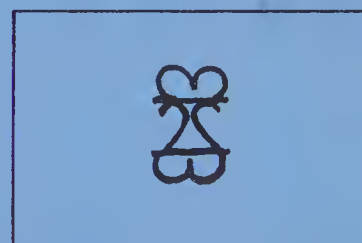
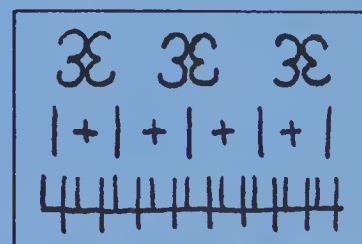
1. Provide Plasticene for children to shape into the numerals 1, 2, 3, and 4.
2. Provide a card with pictures of sets up to 4, and with a strip of paper for their answers stapled beside the pictures (as shown). Children count, print, rip off the answer strip, and check the back for the correct answers.



3. Each pupil needs a paper, scissors, paste, a pencil, and a magazine. Ask the students to fold their papers in four; to number each box 1, 2, 3, or 4; then to find pictures with that number of objects to glue in the appropriate box.

Enrichment

Provide numeral tracers or templates and paper for the students to make designs. Show a few examples.



Display each student's work for the others to try to find the hidden numerals.

UNIT 1 LESSON 4

Objective N4

Recognize and print the numeral 5.

Vocabulary

Toys, cars, teddy bears, skateboards, etc.

Materials

P* and T Numeral Cards to 5
Counters (macaroni, plastic sticks*)

Introducing the Lesson

Hands are used as the “basic material” for the lesson. Hold up one child’s fist and give these directions.

“Show me one. Now one more. How many in all?” *Two.*

“Two and one more.” *Three.* (And so on.)

“Now take one away. How many left?” *Four...*

Have the children try to hold up the requested number of fingers without looking. Then look to count and check. Have them try this alternating each hand.

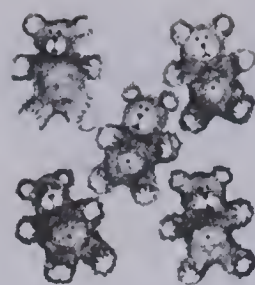
Teaching the Lesson

Introduce the numeral 5. Trace it with a verbal pattern like “Down, around, with a hat on top”. (Doing the down-stroke first often discourages reversals). Have the children practise in the air, on the floor, or on their hand or leg.

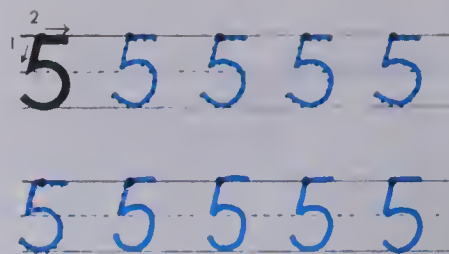
Show T Numeral Cards 1 to 5. Ask the students to show the matching number of fingers.

Repeat, using counters.

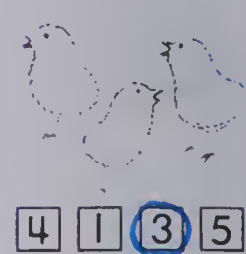
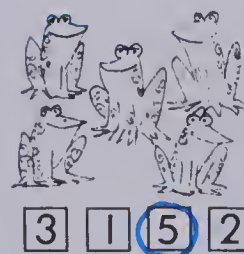
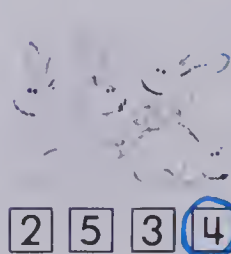
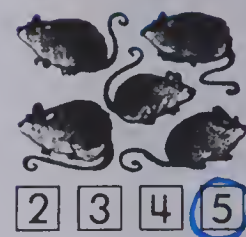
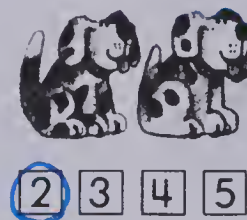
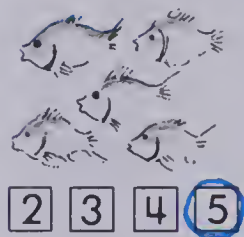
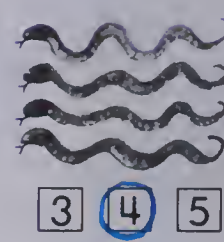
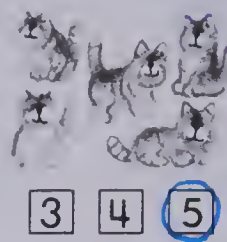
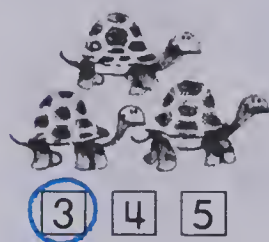
Have the students make sets from 1 to 5 using counters. Give out P Numeral Cards for them to match to each set.



5
five



How many?

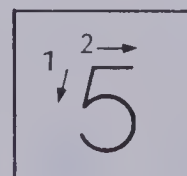


One to five; print 5

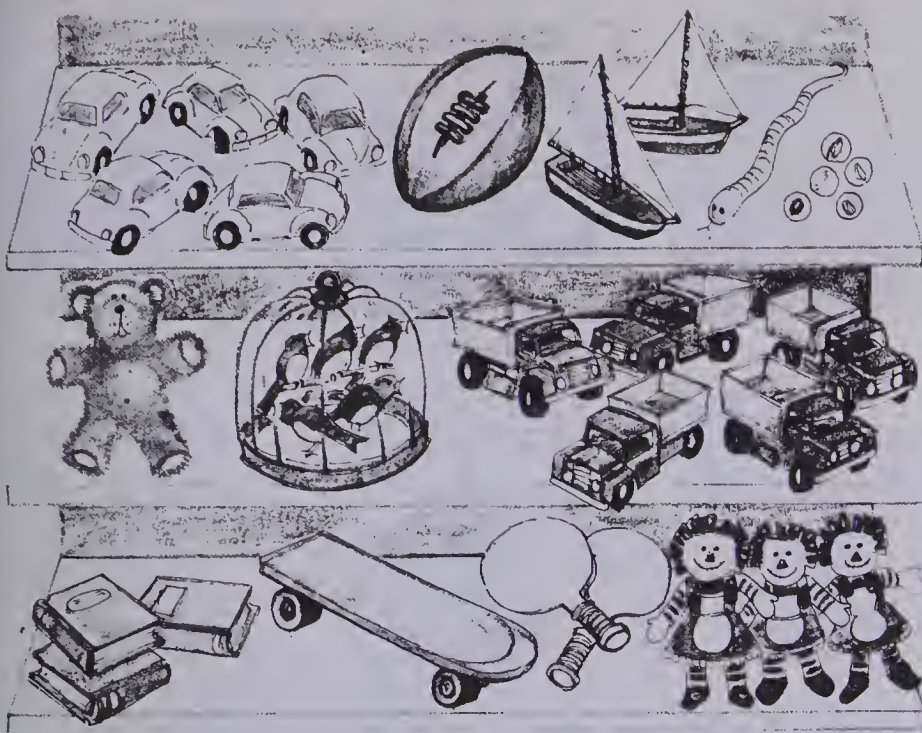
seven 7

Using the Pages

- Review the tracing pattern for 5. Encourage verbalization of the pattern. Check their formation of the numeral as they print 5s at the top of page 7.



- Review the direction “How many?”
- Discuss the various toys on the shelves on page 8. Ask questions about “how many” and about comparisons, such as, “more cards or more boats?” Show the children how to find, count, and record the number of toys of a given type. Not all of the toys are accounted for in the exercise. Some students will want to identify the ones omitted (football, snake, and skateboard) and their amounts (one of each).



How many?

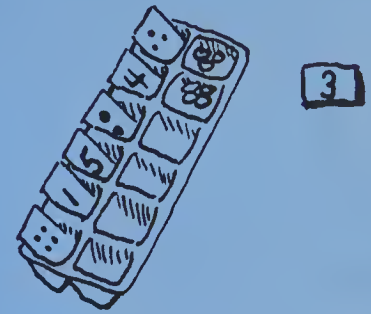


8 eight

One to five; print 5; problem solving

Reinforcement

1. Provide egg cartons with numerals, dots, or picture sets in six spaces along one side. The student is to put a matching set beside each, using macaroni, beans, or P Numeral Cards.



2. Provide a sheet of paper, a pencil, and crayons for each student. Have the students trace the hand they don't print with. Direct them to put one of the numerals from 1 to 5 on each finger. They are to draw the number of rings on each finger suggested by the numeral.

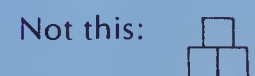
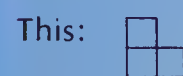


Enrichment

Direct the children to find as many different ways of stacking five blocks as possible. The patterns can be recorded on paper.



Point out that the sides of the blocks should match completely edge to edge.



Problem Solving Activities

Assign Level 1, Unit 1

Objective N5

Recognize and print the numeral 0.

Vocabulary

All, none, some, any, nothing, empty
Direction words: How many birds in each cage? Draw...

Materials

Counters (dried lima beans)
T Numeral Cards 0 to 5
Dice with 0 to 5 on the faces

Introducing the Lesson

Take three beans in your hand. Show them to the students. Ask, "How many?" *Three*. "Count them." *One, two, three*. "Watch." Shake them in both hands; separate them in two closed fists. "How many in all?" *Three*. "Guess how many in this hand." Show the contents of each hand, e.g., two and one. Say, "Two and one; three in all."

Teaching the Lesson

The first time 4 and 0 or 0 and 4 occur in the beans in the hand activity, introduce the numeral for zero. Trace it like a closed C. Flash T Numeral Cards 0 to 5 for the students to read aloud.

Choose a student to stand at the chalkboard with five beans. Write five above the child's head. Ask the child to shake and separate them. Another student comes up, counts the beans in each hand, and records the number above the appropriate hand. Read the chalkboard record as, "Three and two gives us five in all." Repeat. Draw special attention to the use of zero.

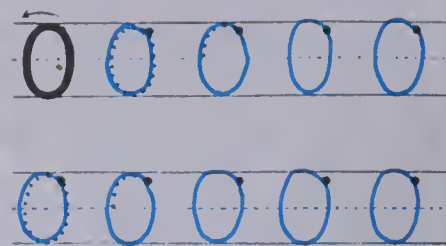


Give dice to small groups of students. Direct them to take turns rolling and calling while the rest build the same set with counters or fingers.



0

zero



How many birds  in each cage?



0 1 2 3



0 1 2 3



0 1 2 3



3 4 0 2



5 0 3 1



2 4 0 5



2 5 3 0



1 4 0 2



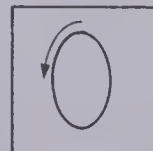
5 0 3 1




Zero to five; print 0


nine 9

Using the Pages

- Cages and nests usually hold a number of birds or eggs. Emphasize that an empty cage has zero birds or no birds at all.
- Before the children print zeros at the top of page 9, review the counter-clockwise tracing pattern for zero, "Like a closed C." Provide template practice for those having difficulty.



- Introduce the use of rebus clues for new words, e.g., "How many birds  ?" Review the circling procedure.
- Do the same for "How many eggs  ?" on page 10. Draw a nest and print the directions "Draw the eggs  ." on the chalkboard. Ask a student to draw the number of eggs you say.

How many eggs  ?



2



3



0



4



0



1

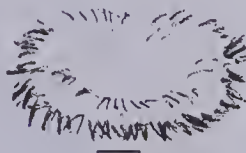
Draw the eggs 



3



4



0



1



0



5

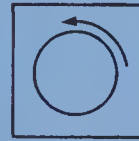


10 ten

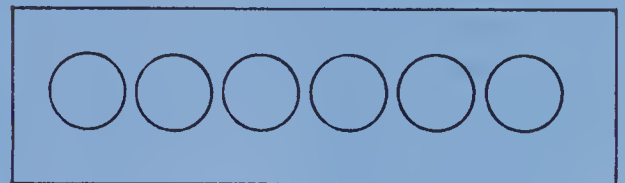
Zero to five; print 0

Reinforcement

1. Provide Geometric Templates* for tracing in a counterclockwise *pattern* at the Numeral Printing Centre. Use a plastic lid or a stiff card cut with an X-acto knife.



2. Provide each student with paper, pencil, and crayons. Ask them to draw six plates in a row on the paper. Draw an example on the chalkboard.



Introduce *ordinal number* vocabulary, first to sixth, as you point to each plate. Give oral directions as to what to put on each plate. "Draw three apples on the first plate." Point to the first. "Draw five cherries on the second plate." Point to the second. Continue with two cupcakes, no hamburgers, one lemon, four carrots.

Enrichment

Using a die marked 0 to 5 on its faces, two or more students can play "Roll and Record." Each student records his or her roll on paper. The first player to roll every number (0, 1, 2, 3, 4, 5) at least once is the winner.

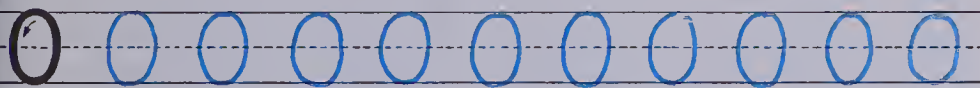
Vary the rules for winning. For example, the winner also could be the first person to get 5 twice. Encourage the students to come up with their own methods of keeping track of which numbers they still need or have already rolled.

Extra Practice

Worksheet N5

Pages 9-10

Print 0.



How many birds?



2



3



0



1



0



5

UNIT 1 LESSON 6

Objective N6

Identify equivalent sets through matching and one-to-one counting.

Vocabulary

More, less, fewer, as many as, the same number of, is equal to

Sports equipment: bat, ball, paddle, etc.

Direction words: Circle sets that match.

Materials

Linking blocks

Buttons of various sizes and colours

Dot Pattern Cards, geometric* and scattered, 0 to 5

Art supplies: paper, scissors, brushes, etc.

Dishes and cutlery

Crayons

Introducing the Lesson

Divide the students into groups of 2 or 3 each and provide them with linking blocks. Show a rod or train of linking blocks. Ask the students to make a train with as many blocks as yours. Ask, "How can we check to see if the trains have an equal number of blocks?"

1. Without counting, move them beside one another to compare by matching one-to-one.
2. Count the number of blocks in each.

Teaching the Lesson

Ask the students to make trains, then compare them to see who used more than *Ann*, fewer or less than *Pete*, or as many as *Jan*.

Use the same procedure but with un-matching objects such as odd buttons.

"Are there as many red buttons as blue buttons? How can we find out?"

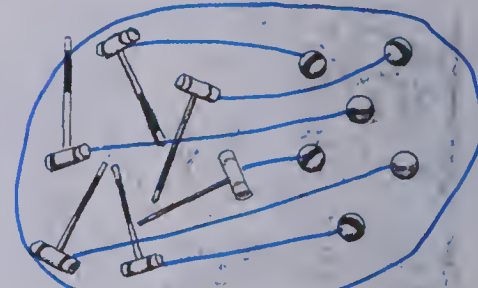
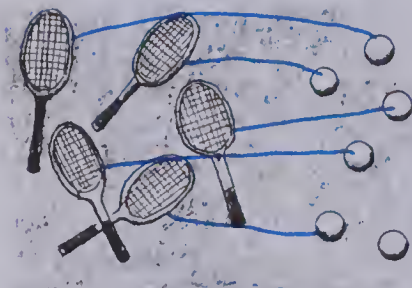
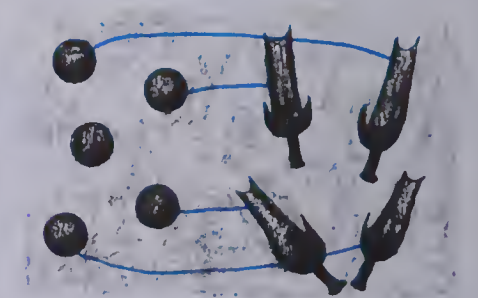
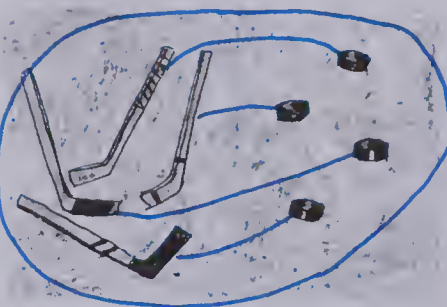
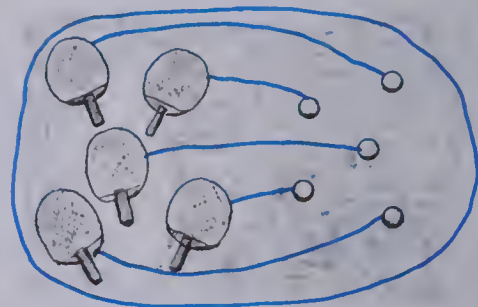
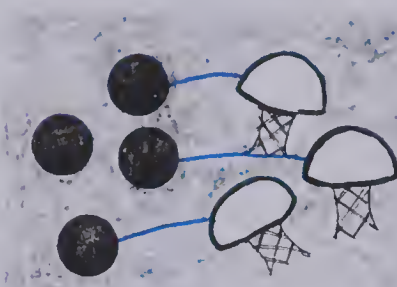
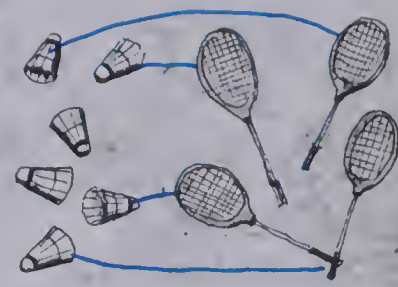
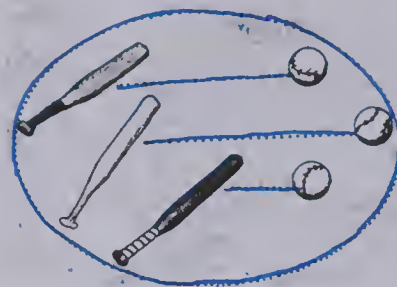
1. Match one-to-one rather than by length.

2. Count both sets.

Ensure that the students can match with *and without* counting the objects.

Using art supplies and/or table settings, ask the students to act out a real-life situation where they must determine equivalence. "Are there enough papers for the children?" (And so on.)

Circle sets that match.



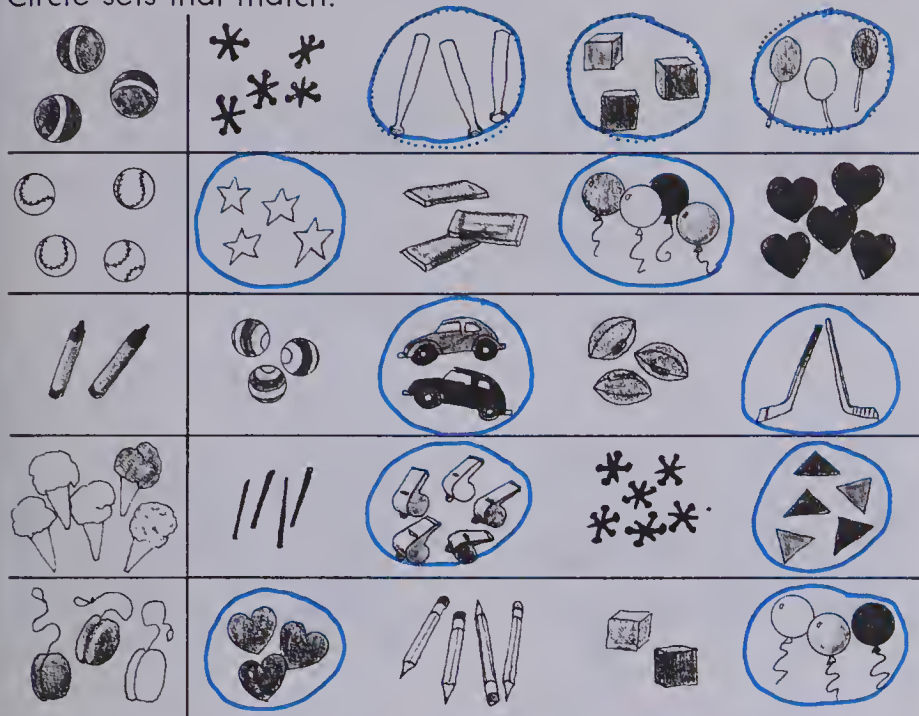
Equivalent sets

eleven 11

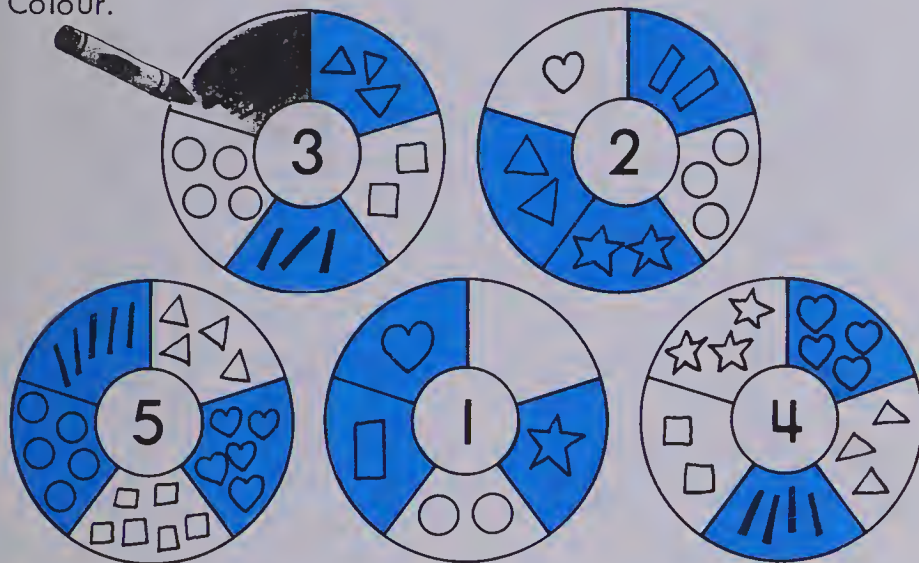
Using the Pages

- As preparation for page 11, use chalkboard examples to introduce the drawing of lines to match sets one-to-one. Ask the students to come up to the board and match objects; then to determine also if the two sets have the same number. They are to circle the objects for "yes." They may also want to cross out sets that don't match.
- Introduce the exercises on page 12 with a chalkboard example. Point out the new direction "Colour sets that match." In the exercises at the top of the page, students are to circle the sets that have the same number as the first set. At the bottom of the page, children are to colour in the parts of the wheel that match the number in the centre.

Circle sets that match.



Colour.

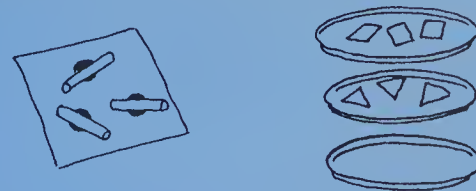


12 twelve

Equivalent sets

Reinforcement

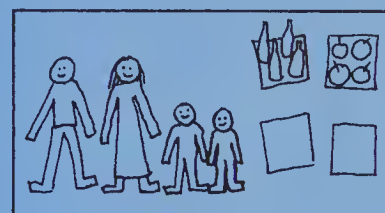
1. Use Dot Pattern Cards (geometric and scattered) and sets of objects to match equivalent sets. The students place the objects on top of the dots to see if they match. If they do, they place the set beside the card.



Or, clip clothespins or paper clips on the cards to correspond to the dot patterns.



2. Provide paper, pencil, and crayons. Ask the pupils to draw their families and four or five boxes of food for a picnic. Give oral directions for drawing the food. One box has a bottle of pop for each person; one box has a sandwich for each; others have apples, cookies, and so on.



Enrichment

Provide a list of names of the children in the class and a sheet of graph paper for each child. Have the children sort and record lists of names having the same numbers of letters.

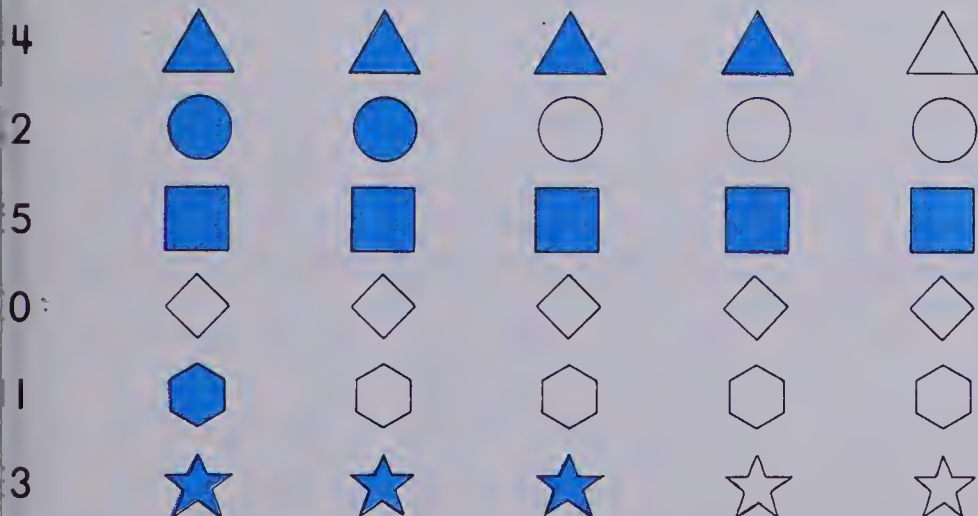
Sam	Alex
Jan	Fred
Tim	Jane
	John

Extra Practice

Worksheet N6

Pages 11-12

Colour.



Objective N7

Identify a set greater than another.

Vocabulary

More than, greater than

Direction words: Which set has more?

Materials

Peanuts, pennies*

Price tag cards to 5¢

Introducing the Lesson

Give two children each a handful of peanuts (6-10). Ask them who has more. Encourage several ways of determining the answer.

1. Guessing, "It looks like more."

2. Matching, by lining up peanuts in one-to-one correspondence.



3. Counting and comparing.

Repeat the process with several pairs of students. "Take a handful, guess, match, then count to check."

Reinforce vocabulary by summarizing: "Peter has more than Mary. He has six.

Mary has four. Six is more than four.

Six is greater than four." Have the students verbalize the relationships.

Teaching the Lesson

Give a few students 6 to 10 pennies. Show them that you have a set of four pennies in your hand. Ask the students to make sets containing *more than* your set, and describe these sets clearly. (T O O O O ; P O O O O O O) "I have six. Six is more than four."

Show the students two objects with price tags up to 5¢. Ask the children to put out pennies to show the cost of each; then ask them which costs more. Repeat, including some cases where the objects cost the same. Orally, use prices to 10¢. With printed price tags, restrict the costs to 5¢.

Use classroom objects and situations for making comparisons:

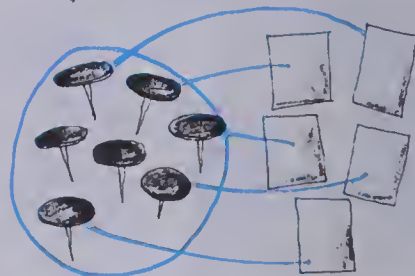
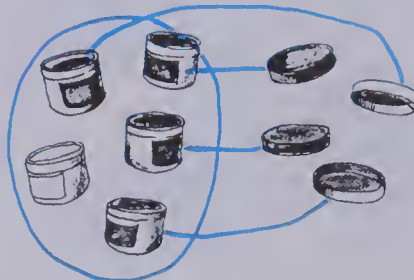
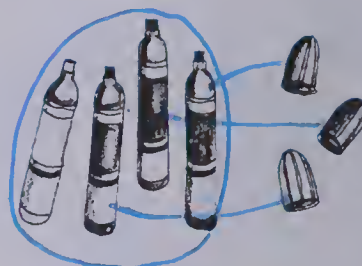
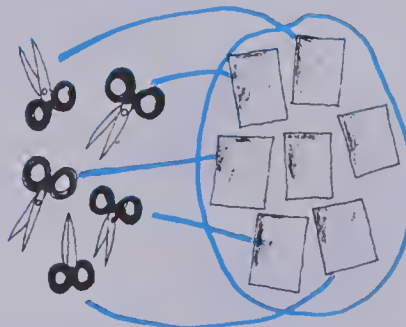
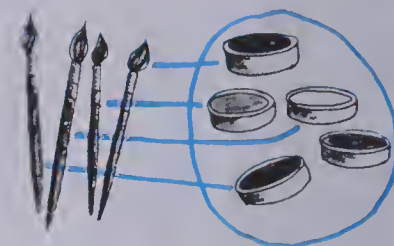
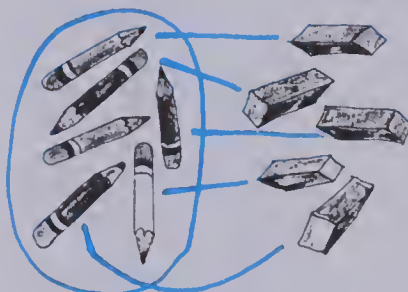
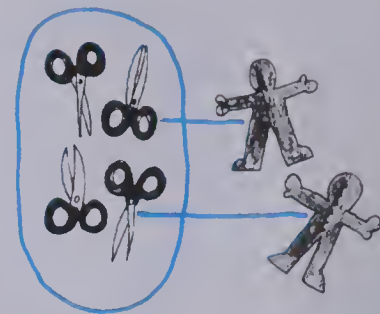
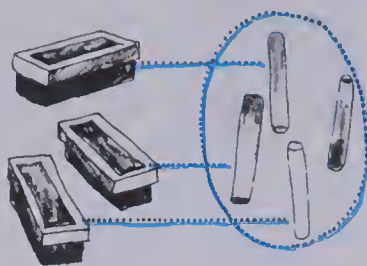
Are there *more* coats *than* hooks?

Are there *more* boys *than* girls?

Match objects one-to-one to check which set has more.

Name _____

Which set has more? Circle it.



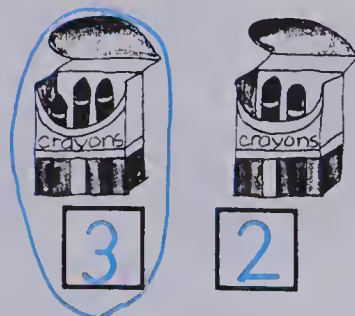
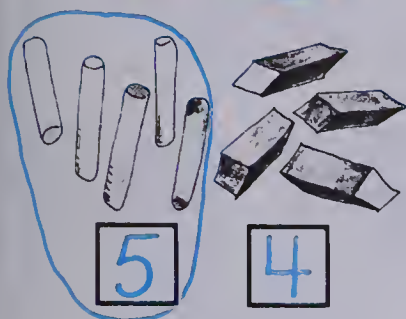
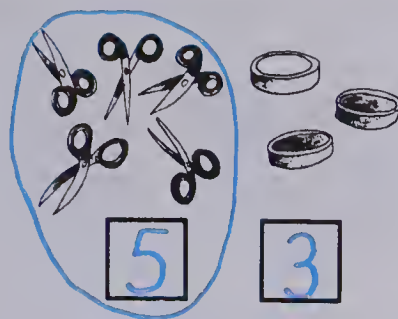
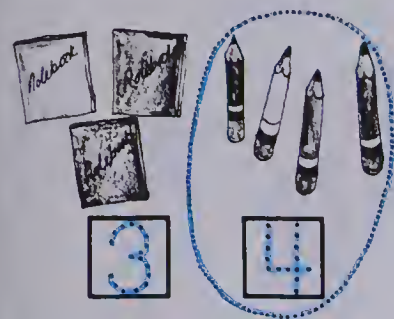
More

thirteen 13

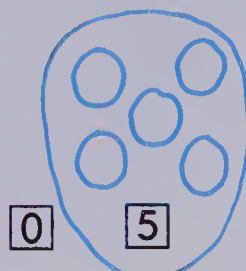
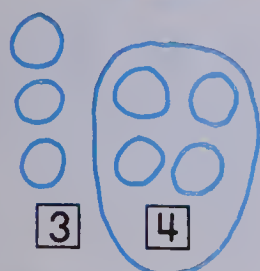
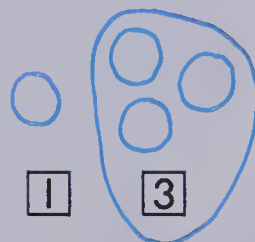
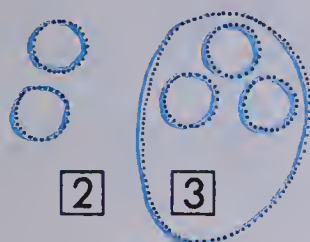
Using the Pages

- For page 13, use a chalkboard example to show the children how to match sets one-to-one by drawing lines between corresponding objects. Then have them identify and circle the greater set.
- Before the children do the top of page 14, review finding and recording "how many," and then circling the greater set.
- For the bottom of page 14, review the meaning of the direction "Draw." After both sets have been drawn, ask the students to circle the greater set. Provide more practice with this exercise for those who need it.

How many? Which set has more?



Draw sets. Which has more?

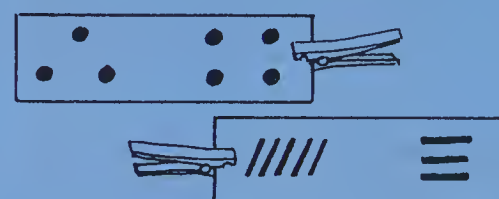


14 fourteen

More

Reinforcement

1. Ask the students to make cards with pairs of sets by drawing or cutting out pictures. They may attach clothespins to show which set is greater.

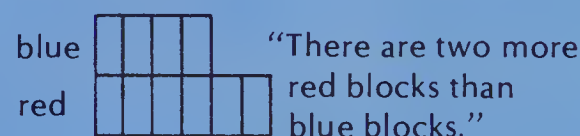


2. Play the game of "Flip and Match." Each pair of students needs a deck of cards with face cards removed. Deal all the cards. Players hold their pile of cards face down. Both simultaneously turn over their top cards. The player with the higher card wins and takes both cards. If the number is the same, they draw again. The winner of the second draw takes all four cards. When their cards are gone, the students count their cards to see who has taken more.

Restrict the cards to the first five of each suit to begin and with less able children.

Enrichment

1. Encourage children who compare quantities with ease to find "How many more?" Use interlocking cubes for comparing "Which has more?" and "How many more?"



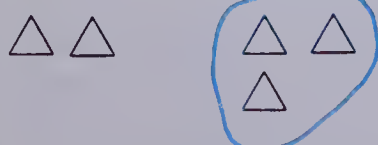
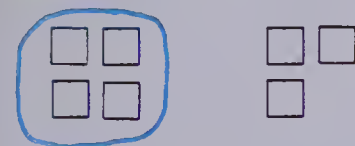
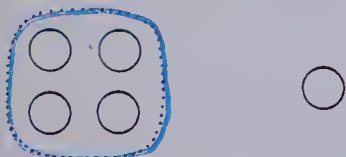
2. In discussions develop the idea of set-subset comparisons. For example, "Are there more boys or more children?" Use familiar materials and situations to develop the concept.

Extra Practice

Worksheet N7

Pages 13-14

Which has more?



Objective N8

Recognize and construct a set with one more than another set.

Vocabulary

One more than

Direction words: Draw one more.

Materials

Counters (blocks, crayons, plastic sticks*)

T Picture Set Cards 0 to 5

T Numeral Cards 0 to 5

Introducing the Lesson

Call three pupils before the class. Ask, "How many?" *Three*. "Let's have one more. Now how many?" *Four*. And so on, to ten.

Put out four crayons or plastic sticks. Now one more. "How many in all? Count, one, two, three, four, and one more is...?" *Five*. Repeat with sets to ten.

Teaching the Lesson

Display sets of counters, then T Picture Set Cards for this procedure. Distribute counters to the students. Show a set and ask the students to put out the same number of counters. "Now make a set with one more. I have a set of five. How many do you have?" *Six*. "Five and one more is..." *Six*.

Repeat, using T Numeral Cards to 5. Build a set like this.

○ ○ ○ 3

"Class, do the same. Add one more. Now how many? Which card goes here?"

○ ○ ○ ○ 4

Flash T Numeral Cards to 5. The students are to whisper the number and then say the number that is one greater. 2 "Two, and one more is..." *Three*. Continue this procedure orally using numbers as high as most of the students are able to count.

Draw one more. Print how many.

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<div style="display: flex; justify-content: space-around; margin-top: 5px;"> <div style="border: 1px solid black; padding: 2px;">4</div> <div style="border: 1px solid black; padding: 2px;">5</div> </div>	<div style="display: flex; justify-content: space-around; margin-top: 5px;"> <div style="border: 1px solid black; padding: 2px;">1</div> <div style="border: 1px solid black; padding: 2px;">2</div> </div>
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One more

fifteen 15

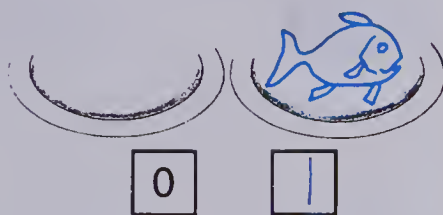
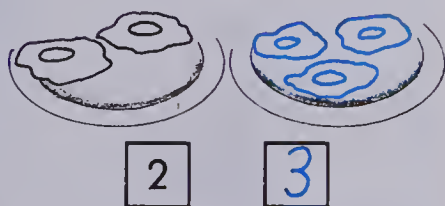
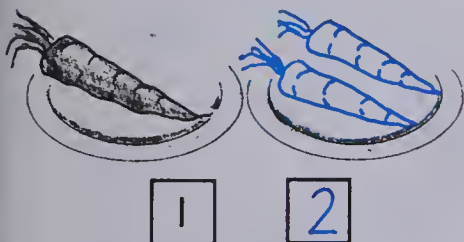
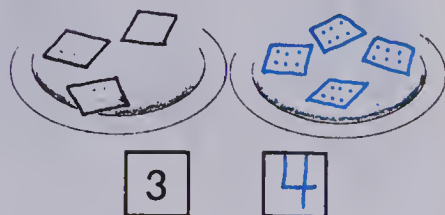
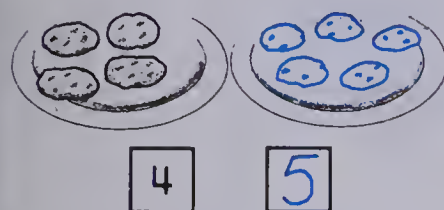
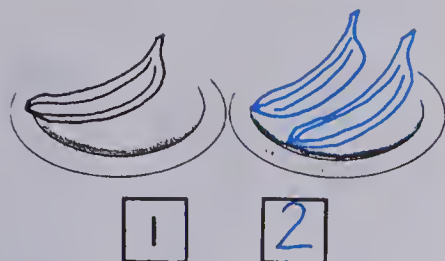
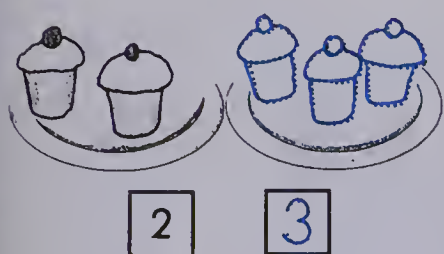
Using the Pages

- To help the class get started with page 15, ask a student to come up to the chalkboard and draw three balloons. "Print how many. Now draw one more. Have you still got three?" No. "Then cross out three, and print how many you have now".



- Use an example involving zero balloons, and then add one more balloon. "Now how many?" *One*.
- To prepare for page 16 draw a plate with three apples. Ask, "How many apples do I have?" Draw another plate. "Sam, come draw a set of apples with one more than I have. Now how many?" *Four*. "Good, three and one more is four."

Draw a set with one more.

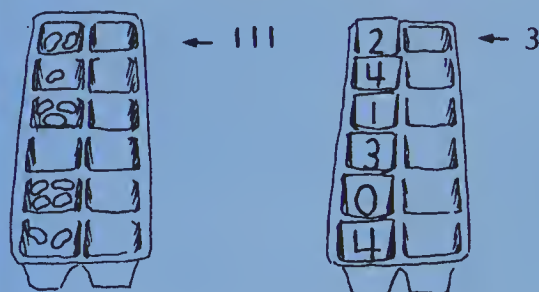


16 sixteen

One more

Reinforcement

1. Distribute egg cartons with sets of beans on one side. Ask the children to count and build a set with one more beside each. Repeat, using numerals.



2. Provide each student with a sheet of paper. Show them how to fold it in eight. In the four boxes on one side, ask them to draw:

3 cats		
1 wagon		
4 kites		
2 stars		

In the empty box beside each, ask them to draw a set with one more; then to write how many are in each set.

Enrichment

Using a box of counters and a die which is marked from 0 to 5 on its faces, direct the children to take turns rolling the die and then taking that number of counters *plus one more*.



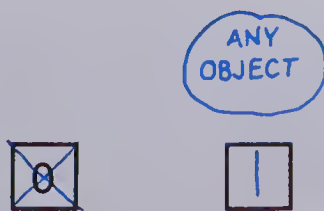
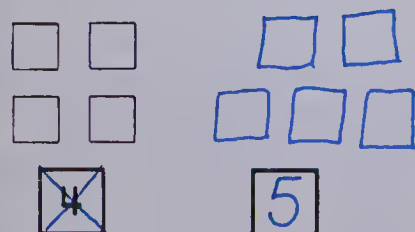
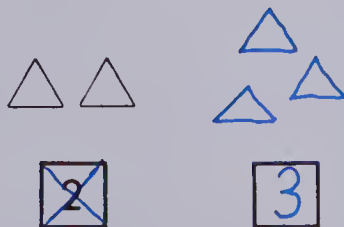
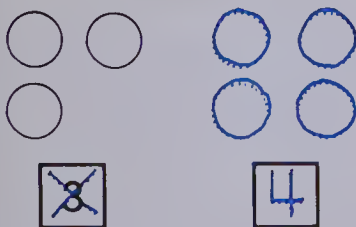
The first child to collect 20 counters wins that round.

Extra Practice

Worksheet N8

Pages 15-16

Draw one more. Print how many.



Objective N9

Order sets and the numerals 0 to 5.

Vocabulary

First, last, most, least, greatest, fewest
Direction words: Join the dots in order.

Materials

Picture Sequence Cards
Cuisenaire rods* or strips, nails,
pencils, etc. of varying length
Counters that join (Unifix, Centicubes*)
Dot Pattern Cards* (geometric) 0 to 5
T and P* Numeral Cards 0 to 5
Word Cards **Zero** to **Five**
Crayons

Introducing the Lesson

Talk about the sequencing of events in a story and use the Picture Sequence Cards as an introduction to ordering. Ask the children to arrange the sequence cards in order.

Get up.

Have breakfast.

Go to school.



Order rods, nails, or pencils by length.

Ask the children to build "trains" with counters that join, and to order them by length (and the number of units).

Teaching the Lesson


Select Centicube trains with 1 through 5 units. Mix them. Ask a child to find the train with the least number of Centicubes, then with the most. Place them with a space between. Have other students order the second, third, fourth longest train.

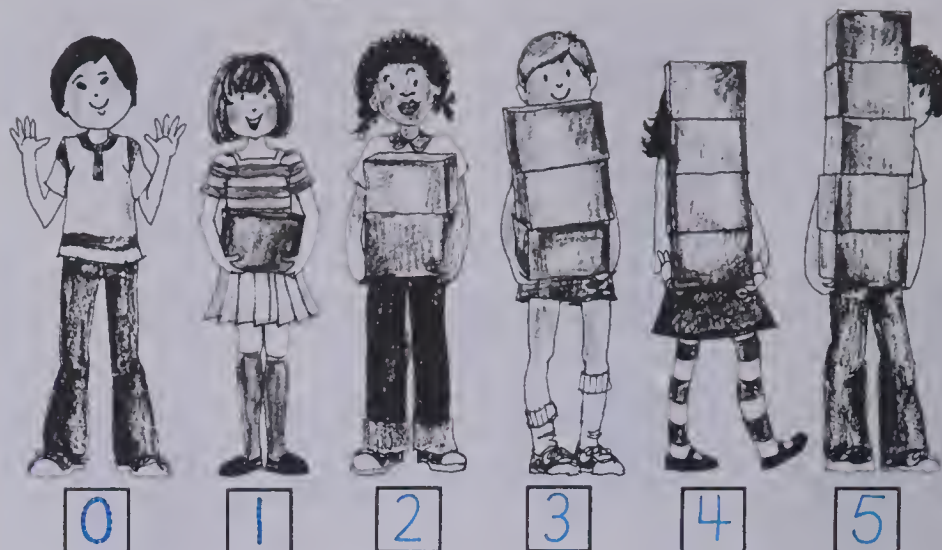
Ask the students to arrange the Dot Pattern Cards in order. Include zero.


Use T Numeral Cards 0 to 5. Ask the students to place them under the corresponding picture or train.

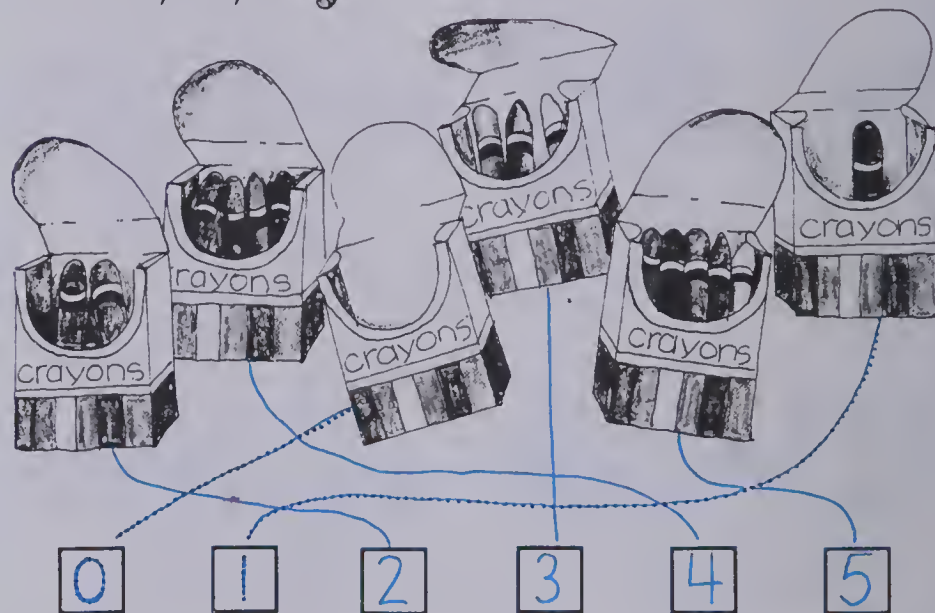
Ask the students to build "trains" of 1 to 5, order them, and place their P Numeral Cards under the set it names.

Order Numeral Cards only. Match them with the Word Cards for zero to five.

How many boxes  ?



How many crayons  ?



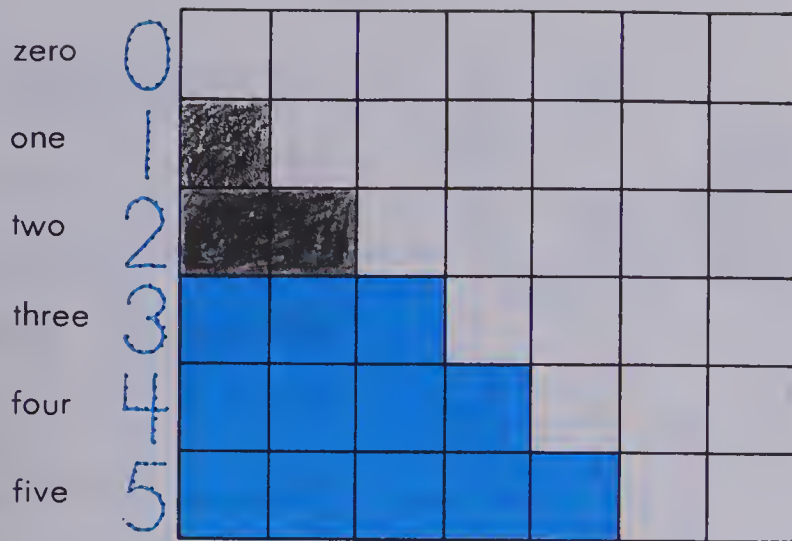
Order 0 to 5

seventeen 17

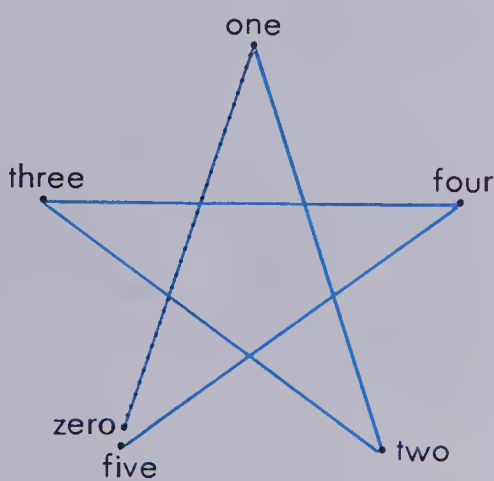
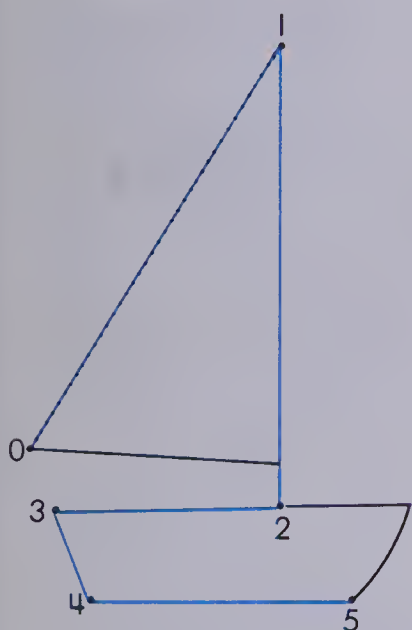
Using the Pages

- For the top of page 17, review the direction "How many?" using the example in the book. Discuss how each child pictured, after the first child, has one more box than the previous child.
- Before the students do the bottom of page 17, discuss the boxes of crayons, emphasizing that the students are to find and print the numbers in order from the least (zero) to the greatest number of crayons.
- For the top of page 18, ask the students to read the words, trace the numerals, and then colour that number of boxes for 3, 4, and 5.
- Before the students do the bottom of page 18, introduce the new direction "Join the dots in order." with a chalkboard example. Explain that they are to start with the lowest number—zero on this page.

Colour.



Join the dots in order.



18 eighteen

Order 0 to 5; bar graph

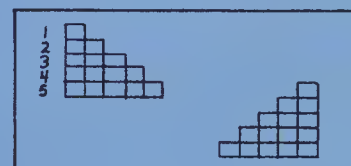
Reinforcement

1. Provide Numeral and Word Card Sets from 0 to 5 for the students to order.

Ask them to make or draw their own sets of the numbers 0 to 5. Have them paste them in order on stiff paper.

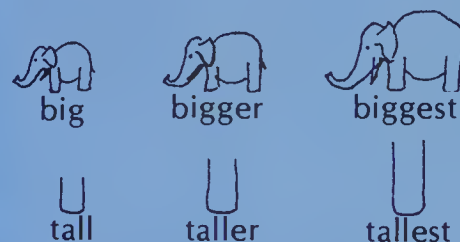


2. Distribute graph paper, pencil, and crayons. Ask the class to colour "stairs patterns" with one more square in each row. Encourage their counting and pointing to how many squares.



Enrichment

Ask the students to draw examples to illustrate comparatives and superlatives.



Use the illustrations for a matching and comparing game. Label a game board.

Big	Bigger	Biggest

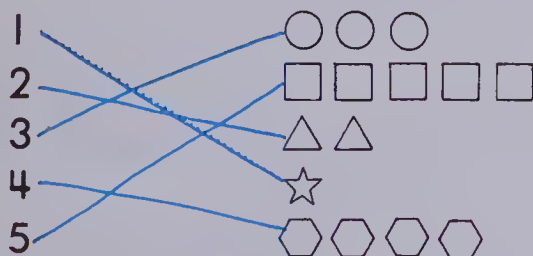
Have the children sort three or four sets of pictures into the appropriate columns.

Extra Practice

Worksheet N9

Pages 17-18

Match.



Count. Draw the sets.



UNIT 1 LESSON 10

Objective N10

Recognize the numerals 0 to 5 and count to 5.

Vocabulary


Direction words: Count the dots. Colour by number.

Materials

P* and T Numeral Cards 0 to 5

Counters*

T Picture Set Cards*

Dot Pattern Cards (scattered )
0 to 5

Crayons

Teaching the Lesson

Review some of the Chapter activities.

Show T Numeral Cards 0 to 5 in mixed order. For each card, the students should read aloud the number, clap, or hold up fingers to show the number.

Show counters, fingers, scattered Dot Pattern Cards, or T Picture Set Cards. Ask the students to hold up the corresponding P Numeral Card.

Show two sets of counters. Ask the students to identify which set has more, or which sets are the same.

Show a set of counters or a T Numeral Card. The students make a set one greater.

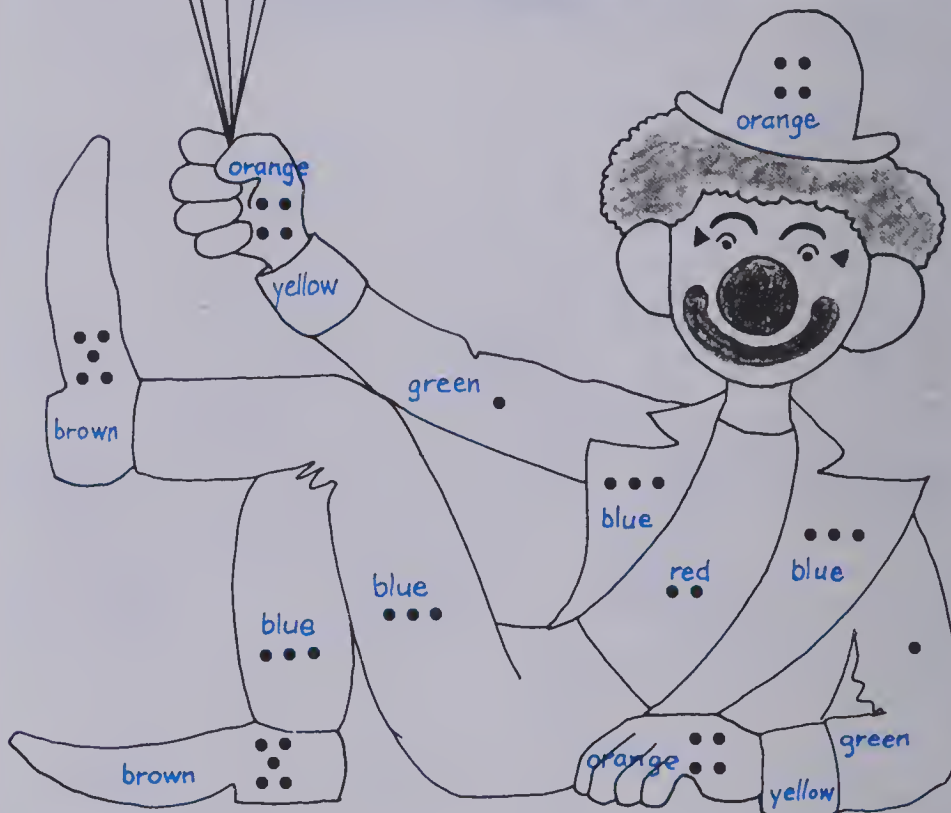
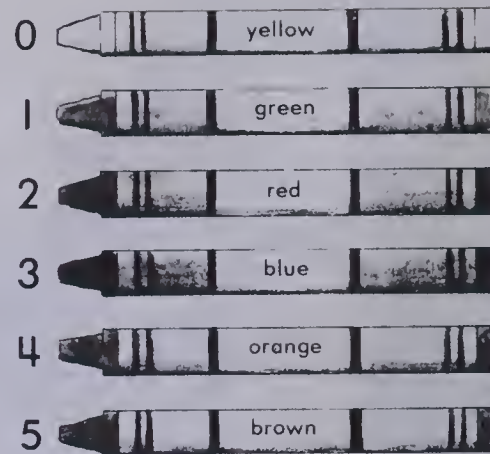
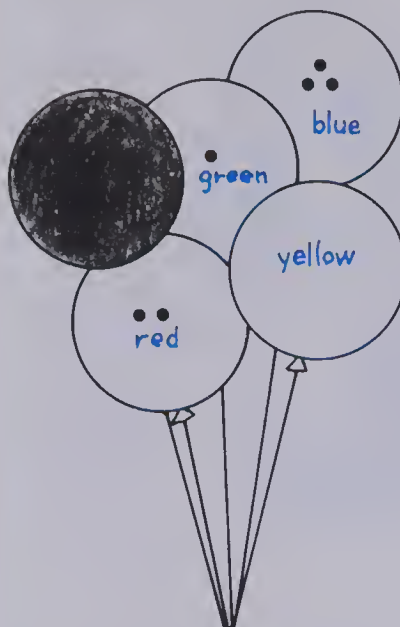
Ask the children to order their P Numeral Cards.

Reinforcement

Ask small groups of students to come to the chalkboard and demonstrate to the rest the proper motor pattern for writing each numeral 0 to 5.

Give the students a worksheet with the numerals 0 to 5 to trace and then print without aid.

Count the dots. Colour by number.



Counting; 0 to 5

nineteen 19

Using the Page

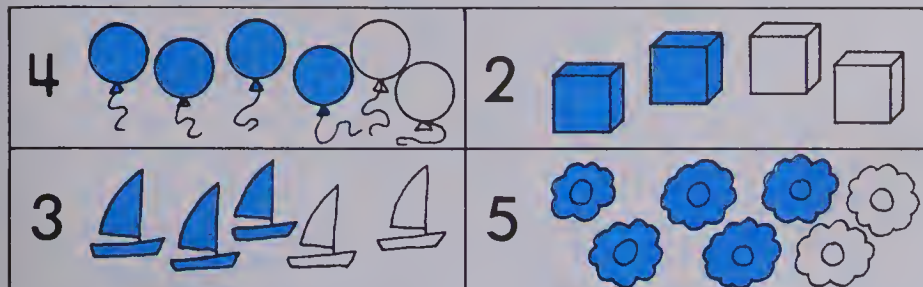
- Read the new instructions on page 19 with the students. Have the class colour the balloons at the top of the page first. Use them as examples for colouring the clown.

Enrichment

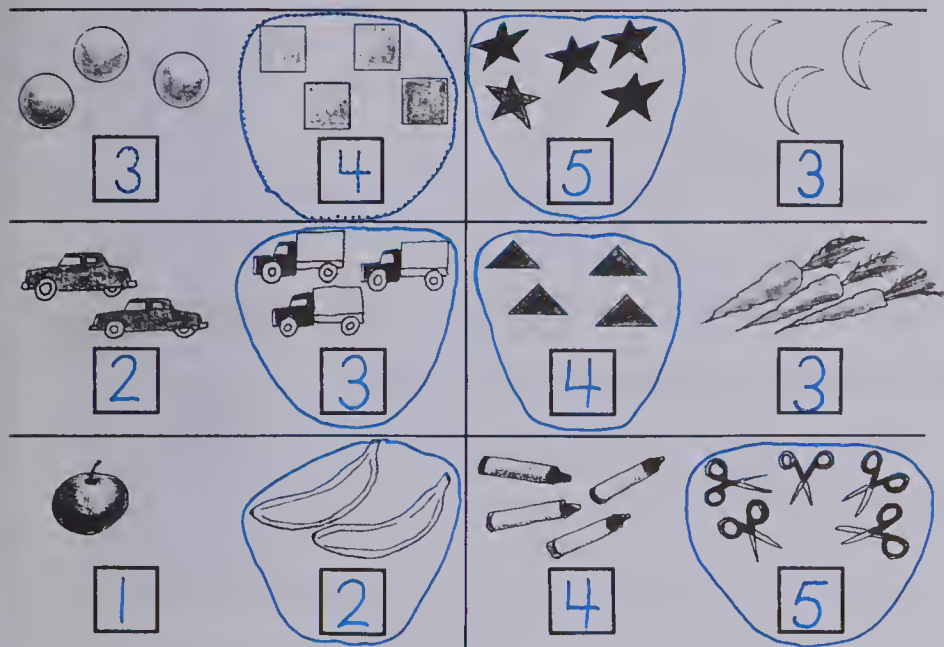
Provide a worksheet of scrambled number words. Ask the students to unscramble the words and then to draw that number of objects. Provide the correct spelling for self-checking.

two	two	zero
fruo		one
rzeo	vife	two
noe	hrtee	three
		four
		five

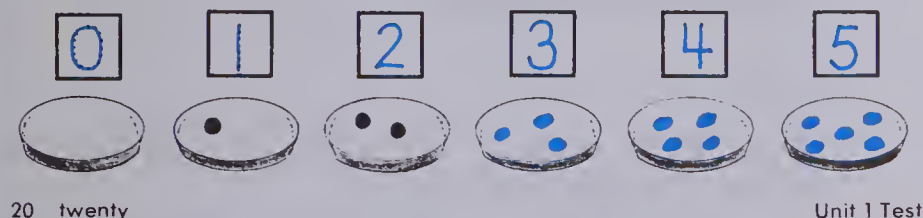
Colour.



Which set has more?



Count. Draw the sets.



UNIT 1

TEST

Part 1: Count and colour a set of a given number to 5.

Part 2: Count and record the numeral.
Compare two sets to find the greater.

Part 3: Order numbers to 5.

Informal Assessment

For students who seem to have difficulty with the test and the unit objectives, these individual assessment items may provide more specific information than the test.

1. Matching Equivalent Sets

"Find two sets with the same number of objects."



"Build a set with as many objects as I have."



2. Reading and Writing Numerals 0 to 5

"Read these numerals for me."



"Write these numerals as I call them."

3. Associating Numerals with Sets 0 to 5

"Show me this many blocks."



"Match one of your Numeral Cards to the picture I show you."



4. Counting

"Count for me starting at one. How high can you go?" (Rote)

"How many blocks do I have here?" Is the rote-counting sequence correct and in one-to-one correspondence?

Are there identifiable counting errors?

"How many dots are on each card?" Does the student instantly recognize sets to 5?



5. Comparing

"Build a set with one more than mine."

"Which set has more?"



"Which is more—five or two?"

"Which is greater?"



6. Ordering

"Put these trains in order from least to greatest."



"Put these numeral cards in order from least to greatest."



"Print the numerals from zero to five."

UNIT 2

Numerals to 10

Theme: Animals

Lesson	Objective		Pages
1	N11	Recognize and print the numeral 6.	21-22
2	N12	Recognize and print the numeral 7.	23-24
3	N13	Recognize and print the numeral 8.	25-26
4	N14	Recognize and print the numeral 9.	27-28
5	N15	Recognize and print the numeral 10.	29-30
6	N16	Identify a set that is less than another.	31-32
7	N17	Identify and construct a set with one less than another set.	33-34
8	GR1	Interpret and construct simple graphs (pictograph and bar graph).	35-36
9	N18	Order sets and numerals 0 to 10.	37-38
10	N19	Match sets, numerals, and words 0 to 10.	39
Test			40

Vocabulary

some, all	one less than
less than	take away one
fewer than	an equal number
not as many	most
more than	least
greater than	in order
is equal to	in order from <i>least</i>
the same	to <i>greatest</i>
the same number as	count forward by ones
	zero, one, two, three,
	four, five, six, seven,
	eight, nine, ten

Printed Directions:

Match...

Find the...

Which set has less?

Colour a box for each pet.

Materials

Placemats:



- one large one for teacher demonstrations
- one smaller one for each student

Hands placemats:



- one large one for teacher demonstrations
- one smaller one for each student

Numeral Cards: to —for Teacher (T) and for Pupils* (P)

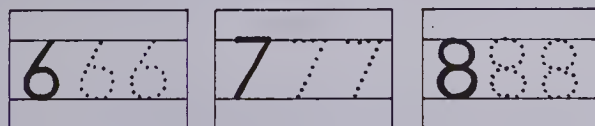
Picture Set Cards: to —for Teacher (T) and for Pupils (P)

Dot Pattern Cards: to

— geometric* and scattered (See introduction to Unit 1)

Price tag cards: to

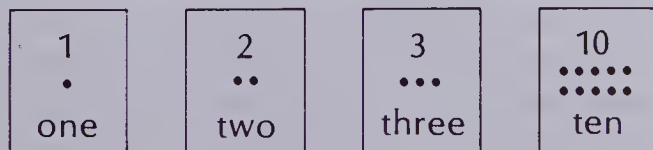
Acetate Printing Cards:



Printing Templates:



Number Word wall reference charts:



Number Word Cards: to

Counters:

bingo chips*

bottle caps

lima beans

blocks

Unifix or Multilink
cubes

macaroni

pennies*

buttons*

sticks*

regular game dice

blank dice

paper plates

cups

boxes

jars

old decks of cards

egg cartons

feltboard

felt cutouts

stickers

box of crackers or
cookies

rope

string

crayons

pencils

paste

scissors

unlined paper

graph paper

chart paper

magazines

Cuisenaire rods
1 to 10*

*Available in Houghton Mifflin K-2 Activity Kit.

About This Unit

Unit 2 continues to develop number-numeral associations to ten, and numeral printing skills. The objectives of Unit 1 are pre-requisites for Unit 2. Both the pupil's Unit 1 test and the informal assessment suggestions in the Teacher's Resource Book, page 20, can be used to assess mastery of Unit 1 objectives and readiness for Unit 2.

In addition to the specified Unit 2 objectives, the activities in the Introducing the Lesson and Teaching the Lesson sections provide an intuitive introduction to some important concepts that will be more fully developed on a symbolic level in later chapters. In Unit 2 these objectives are dealt with orally and through the use of concrete materials, only.

1. A quantity can be described in many ways; we have different names for numbers.

5, five
in all



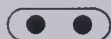
in a pattern



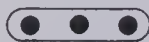
scattered



lined up



in subsets, such as two
and three

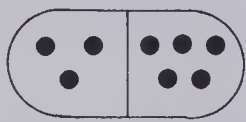


four and one

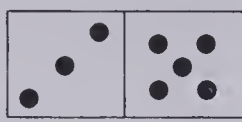
The invariance of number despite changes in the physical arrangement of the elements of a set is developed through the use of a variety of materials and pictures.

2. Part-whole or subset-set relationships are developed intuitively through the use of models and materials such as:

Eight in all

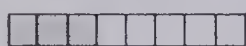


8 in all



3 and 5

8 in all



3 and 5

9 in all

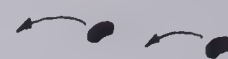


4 and 5

3. Grouping objects into sets of equal size is introduced partly as preparation for counting in multiples. Also, the student's ability to group objects visually and to recognize small groupings in large sets is a step in the development of more efficient rational counting and many-to-one correspondence of number. To encourage such groupings, practice is provided in the immediate recognition of small groups (to five) without counting, and in counting on from a group.
4. Counting on, the ability to mentally represent a quantity and add or count on from it, gradually develops with maturity and experience. Most lessons give some

opportunity to develop this essential abstraction.

Oral work with materials is provided first.



"I have eight beans in the jar. Now how many? Let's count to check."

Then oral counting practice is given.

"Count for me starting at seven."

Oral problem solving involves counting on with a tally.



"I have eight cents in all. Here is five cents. How many cents are hidden? Count on." *Five... six, seven, eight. That's three.*



"Put five blocks in. How many more blocks do you need to get seven in all? Count on." *Five... six, seven. "How many did you add?"*

Drawing exercises also are provided.



or



Draw 5 eggs.

"Five eggs in all. How many did you draw to get five in all?"

5. Counting practice should continue to be a regular part of the daily routine and should be utilized in subjects and at times other than just the math period. How far you extend the counting will depend on your class. Some children may be able to count by ones to beyond 100 while others may have difficulty with the teens, twenties, or sequencing of the decades. Unit 2 introduces counting backwards from ten or less, finding one less, and finding the lesser of two sets. For more able children these same skills can be used for numbers to 50 or 100.

Activity Centre

Organize a Sorting and Comparing Centre in your classroom. This centre is designed to integrate math concepts with other general learning objectives through the use of familiar materials and related problem-solving situations.

Here are some of the skills and concepts that can be enhanced through experience with the sorting and comparing activities.

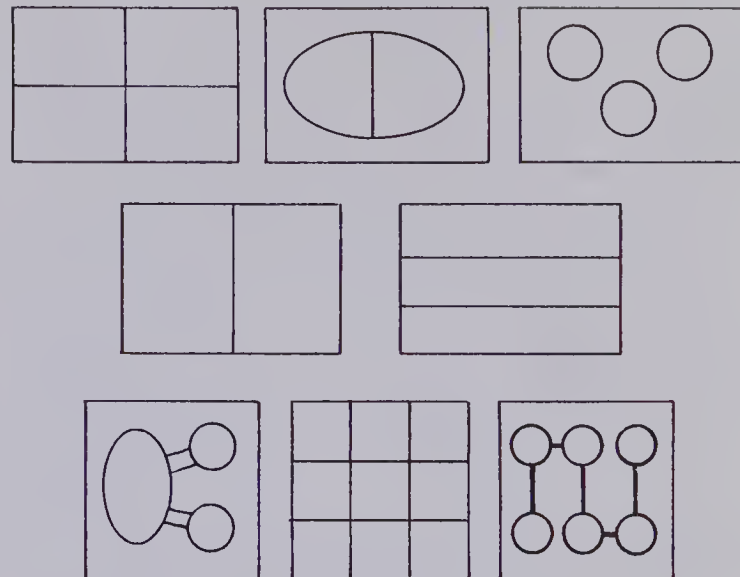
- counting skills
- classification concepts
- comparison concepts (more, less, equal)
- order concepts
- set/subset relationships
- operations — joining, separating, grouping
- logical reasoning
- independent thinking
- expressive language
- vocabulary related to the attributes of similarity and difference as well as to set characteristics, comparatives and superlatives
- visual discrimination of likeness and difference
- fine motor coordination
- responsibility for caring for materials
- familiarity with materials used in future lessons
- ability to work independently or in a small group

Have available in one area of your classroom the following materials.

macaroni	nails	paper
dried beans	stamps	objects
nuts	pencils	plastic
seeds	crayons	objects
shells	wall paper	metal
rocks	ribbon	objects
leaves	wool	cork objects
keys	string	paint sample
buttons	wooden	cards
coins	objects	

picture sets (animals, vehicles, food, etc.)
 attribute blocks
 picture card sets
 pan balance for comparing mass

open-ended sorting boards

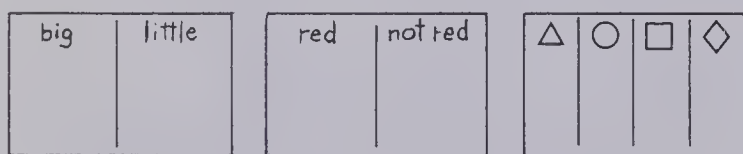


Sorting boards with labels for attributes such as:

- | | | | |
|---------------|--------|----------|-------------|
| — colour | red | blue | ... |
| — shape | △ | ○ | ... |
| — size | big ● | little • | |
| — pattern | | | |
| — texture | rough | smooth | |
| — length | long | short | |
| — mass | heavy | light | |
| — use or type | animal | tool | vehicle |
| | | | ... food |
| — number | 0 | 1 | 2 |
| | | | many |
| | | | few |
| | | | more than 2 |

The following activities are suggested for the sorting and comparing centre.

1. Conduct oral lessons to develop the same-different concept and vocabulary. Have children choose two objects from a "junk" collection, and describe similarities and differences. Gradually increase the number of objects presented and develop situations involving both gross and fine differences.
2. Let children sort collections of keys, shells, stones, buttons, etc. according to their own classifications. Ask the children how they decided to put them the way they did.
3. Have other children guess how the materials are being sorted and try to put the next object into the appropriate pile.
4. Integrate counting and set-subset relationships by asking questions such as:
 - a. How many keys did you start with?
 - b. How many have a hole like the ones in this pile?
 - c. How many don't have holes in them like the ones in this pile?
 - d. If you put the two piles together, how many keys will you have? Let's check.
 - e. Are there more red buttons or blue buttons?
5. Provide objects and sorting boards for children to sort in a pre-determined way, based on a single attribute such as colour, shape, use, etc.



Some sorting tasks could be:

- Colour**
- Find the red things.
 - Sort the crayons into piles, by colour.
 - Put the crayons in the correct tins red yellow blue.
 - Look at the pile of blue crayons. Some are darker than others. Sort them into light and dark blue groups.
 - Take two red colour cards. Which is darker? Put it in this pile. Take two more.
 - Count the pictures with red in them.

- Shape**
- Find the round shapes.
 - Sort the macaroni by shape.
 - Put the blocks on the board.
 - Colour all the round shapes red. (on a worksheet)
 - Trace three different rectangles onto your paper.
 - Find the circles. Now find the big circles. Now find the big green circles. How many are there?
 - Find keys with a round top, a square hole, a pointed end....
 - How many round leaves are there?

- Size**
- Sort the shells into piles of big and little shells.
 - Which coins are the same size as this one? Which are bigger; which are smaller?
 - Which animals are big? Which are bigger than a frog? than a cow?
 - Sort the "people pieces" (Attribute Cards) into thin people and fat people; tall and short. How many tall, fat people can you find?
 - How many big beans are in here? Are there more peas or more lima beans?

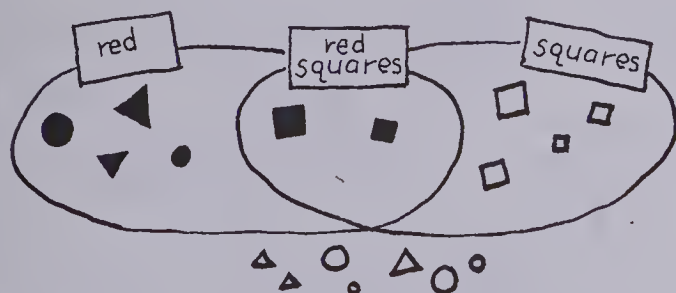
- Pattern**
- Sort these fabrics into patterns and plains.
 - Sort these fabrics. How did you sort them?
 - Find all the fabrics with blue and with patterns.
 - Find all the patterned wall paper pieces. Sort them. Take two from one pile. Which pattern is brighter? smaller? busier?
 - How many have polka-dots?

- Texture**
- Sort the pebbles by texture.
 - Which fabrics are smooth?
 - Which are softer than this piece?
 - Which wooden things are smooth?
 - Close your eyes. Feel the shells. Which side is the smooth side? Put all the shells smooth side up.
 - How many things are furry?

- Length**
- Find all the nails that are longer than this one.
 - Which strings are the same length as this one?
 - Take two ribbons. Which is longer? Sort them into longer and shorter piles.
 - Which pencils are longer than the string?
 - How many are longer than this?

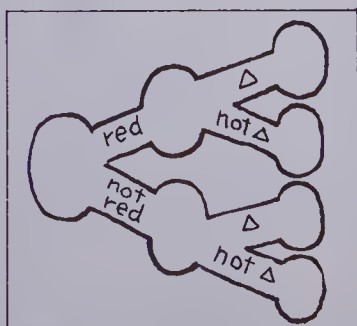
- Mass**
- Hold one thing in each hand. Which is heavier? Draw it.
 - Use the scales. Which is heavier? Was your guess right?
 - Which objects are heavier than your shoe?
 - Sort these pictures into heavy, medium, and light objects.
 - How many blocks does it take to balance a chalkbrush? your reader?

6. Through oral lessons develop the idea of multiple classifications where more than one attribute is used. Use strings to separate sets, and labels to identify the sets. Give an oral group lesson to solve the problem of what to do about an object that belongs in both sets. Some children may immediately see a solution while others may not.



7. Other types of boards can be used for sorting that involves more than one attribute. Attribute block sets are particularly useful, but other materials can be used.

	△	○	□
red			
blue			
green			



8. Objects and picture sets can be used for sorting on the basis of number with most of the activities suggested.

How many pictures of objects?

How many holes?

0	
1	
2	
3	
4	

	2	4
red		
blue		
green		
other		

9. Integrate science with the sorting activities by using criteria such as: alive/not alive; paper/metal/plastic/wood etc.; floats/doesn't float; heavier/lighter than a...; magnet attracts/doesn't attract; etc.
10. Integrate reading vocabulary with sorting activities using letter and word cards. Sort by:
- number of letters in a word
 - number of vowels in a word
 - name cards for boys/girls
 - word cards for people/places/things

boys	Ken John
girls	Sally Ann

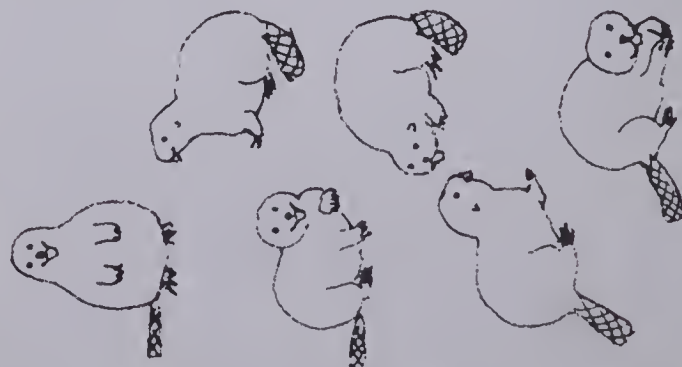
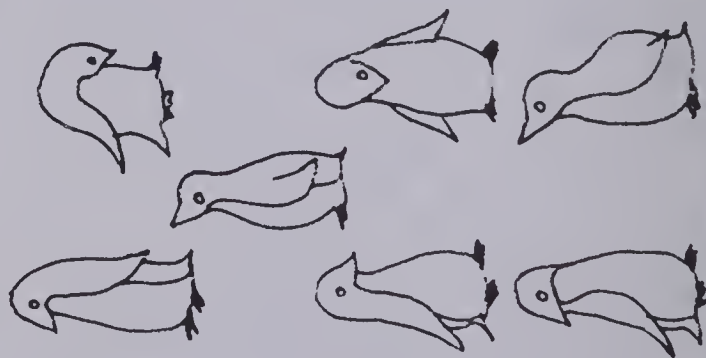
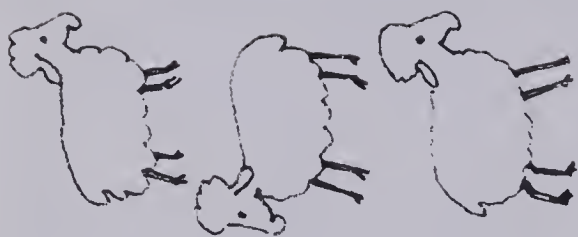
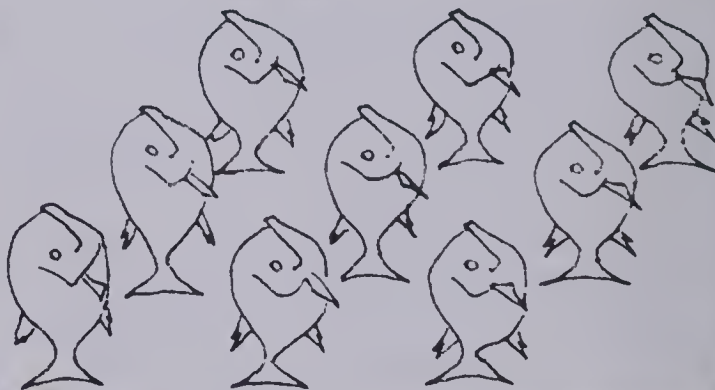
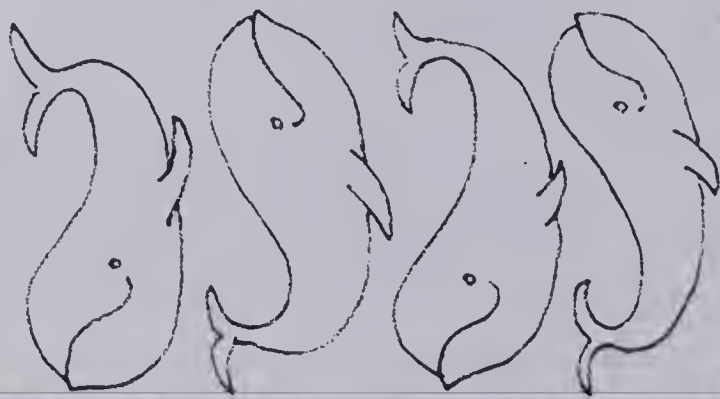
alive	not alive
boy cat	car red

11. Students can extend the activities to include tallying or recording results of the sorting.

boys	### 	12
girls	### ### ###	15



Picture Set Cards



Name _____

Pretest

Unit 2

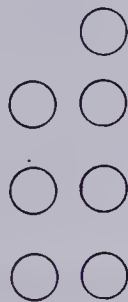
How many?



3 4 5



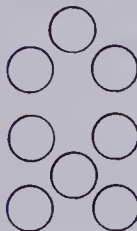
8 9 10



7 8 9



5 6 7

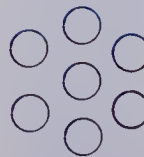


6 7 8

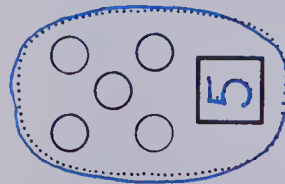


8 9 10

Which set has less?



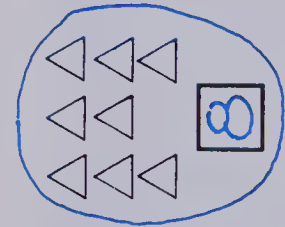
7



5



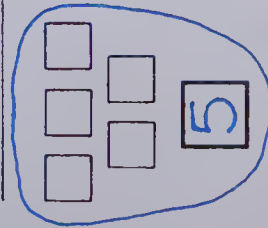
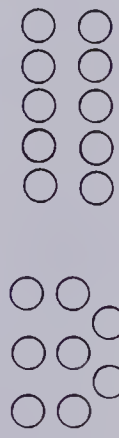
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8



6



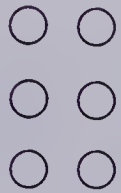
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Name _____

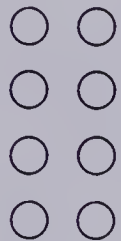
Post-test

Unit 2

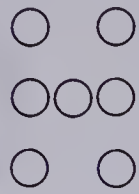
How many?



6



8



7



5



10



9

Draw a set with one less.



5



4



10



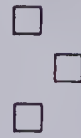
9



7



6



3



2

UNIT 2 LESSON 1

Objective N11

Recognize and print the numeral 6.

Vocabulary

Jungle animals: monkeys, giraffes, zebras, lions, etc.

Counting vocabulary: some, all

Materials

P* and T Numeral Cards 0 to 6

Counters: bingo chips* or bottle caps

Placemats (See Unit introduction)

Regular game dice

Crayons

Introducing the Lesson

Review numerals 0 to 5 by flashing the T Numeral Cards. Ask the students to read or clap correspondingly.

Teaching the Lesson

Using counters, build sets from 1 to 6 saying, "Four and one more is..." Five. "Five and one more is..." Show Numeral Card 6. Trace the numeral with the children in the air, on the floor, on their backs, and so on, going "down and around".

Give out placemats and counters. Show the students how to build a given number in the oval. Practise orally.



"Two."



"Six."

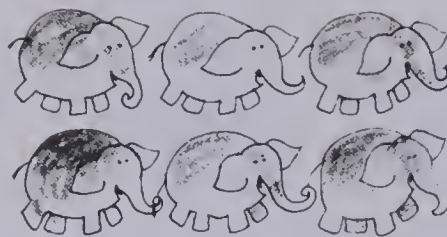
Encourage the students to build on to or take the existing set rather than clearing the mat each time.

Using T Numeral Cards, ask the students to read silently and build the sets of objects on their placemats.

Give out P Numeral Cards. Show the students how to label a set by placing a card above the oval.

Practise by clapping zero to six times while the pupils count, build an equivalent set, and label the set.

Pass dice around. Have each student roll a die, call the number, build a set on the placemat to represent the number, and label the set with a card.

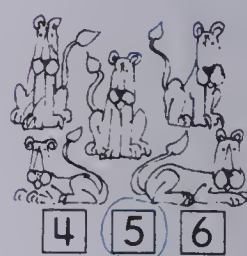
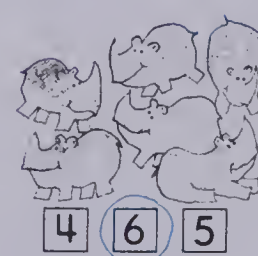
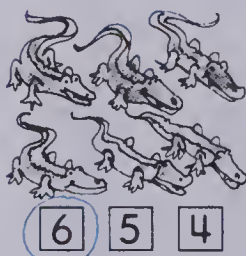
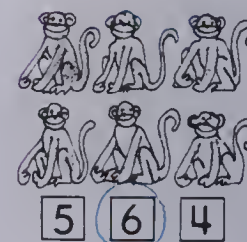
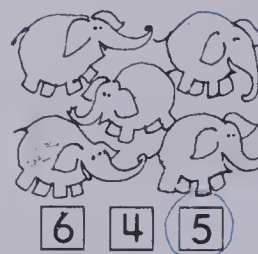
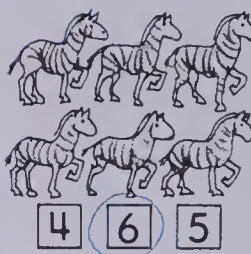
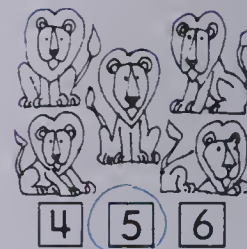
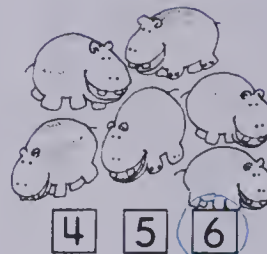
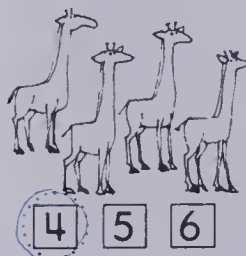


6

six



How many?

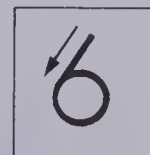


Four to six; print 6


twenty-one 21

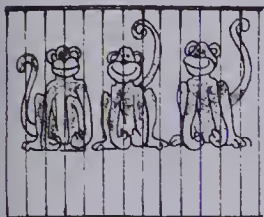
Using the Pages

- Discuss animals you might find in a jungle. Identify the animals on pages 21 and 22.
- Introduce six as five and one more, three and three, etc. Review the tracing pattern for 6, "down and around," and the direction "How many?"



- For the jungle scene at the bottom of page 22, read the directions with the students. Ask, "How many elephants in all?" "How many elephants do you colour?" "Will you colour all the elephants?" Emphasize that some animals will not get coloured.

How many monkeys ?



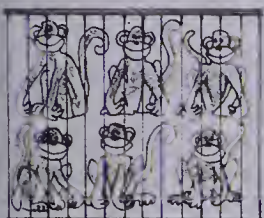
3



6



0



6

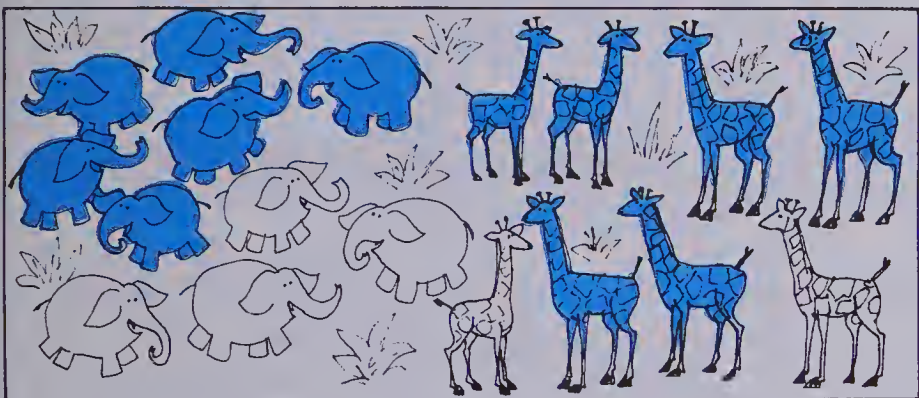


4



5

Colour 6  and 6 

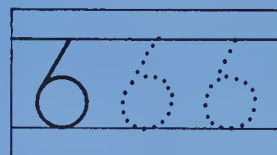


22 twenty-two


Zero to six; print 6


Reinforcement

1. Have Acetate Printing Cards and Templates available at the Numeral Printing Centre for extra practice.



2. Prepare a worksheet, print on the chalkboard, or prepare job cards with the following tasks.

Draw 5 cats. 

Draw 3 balls. 

Draw 6 balloons. 

Draw 1 car. 

Draw 4 trees. 

Draw 2 flowers. 

Enrichment

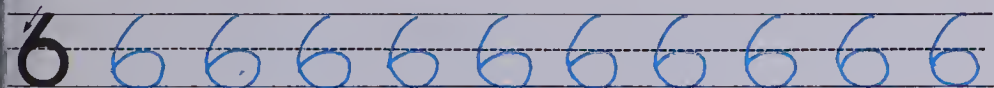
Make a jungle or zoo mural. On cards, write the names of sets of animals

3 giraffes . Provide each child with

paper and a card. After reading the card, each child draws a picture on the mural of the set named on his or her card. After the drawings are done, the cards can be used for matching to the appropriate set of animals.

Extra Practice

Print 6.



How many?



6



5



6



4



6



3

Worksheet N11

Pages 21-22

UNIT 2 LESSON 2

Objective N12

Recognize and print the numeral 7.

Vocabulary

Animals of polar regions: penguin, seal, caribou, walrus, etc.

Direction word: Match....

Materials

Counters: lima beans

T Numeral Cards 0 to 7

Large hands placemats or felt hands



Paper plates or cups

Introducing the Lesson

Using counters, review “and one more is” to 6. Review reading the Numeral Cards.

Teaching the Lesson

Have the children read the Numeral Card **6**. Six. “And one more is...?” Seven.

Show the **7** card. Trace the numeral with the children on the floor or on their desks going “over and down” in two connected strokes.

Have the children pick up four counters, shake them, separate them into two hands, and read the hands.



Three and four;
seven in all.

“Try ‘seven in all’; one is in this hand. How many are in my other hand?” The student should both guess and check.





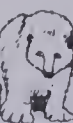






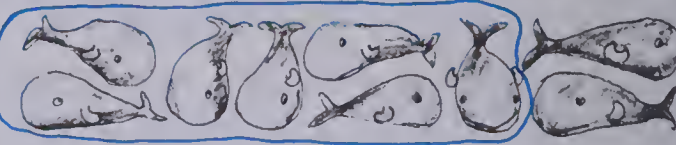


Have the children try to use seven counters to make the shape of a 7.



7 seven



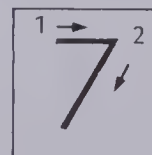
Circle 7 	
Circle 7 	
Circle 7 	
Circle 7 	
Circle 7 	
Circle 7 	

Seven; print 7

Twenty-three 23

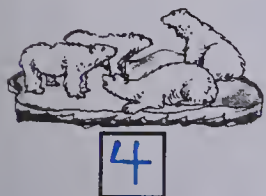
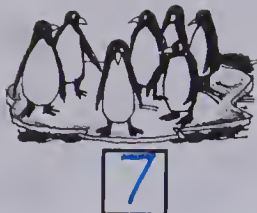
Using the Pages

- Discuss the animals of the North Pole and the South Pole shown on pages 23 and 24.
- Review subsets of seven and the tracing pattern for 7, “over and down”.

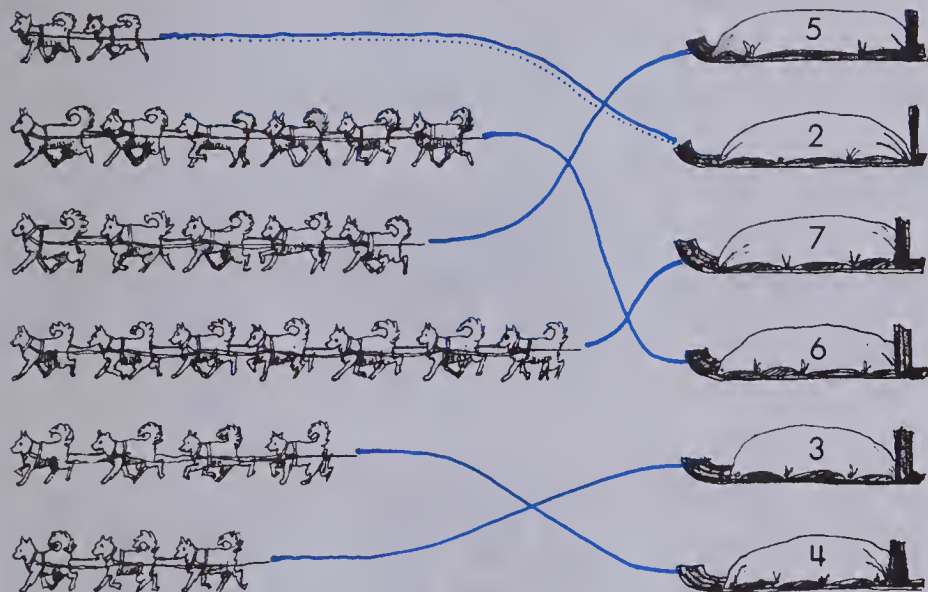


- Use a chalkboard example to introduce the “Circle...” exercises on page 23.
- Demonstrate how to draw a line to match the number of dogs to the corresponding sled as required on page 24.

How many?



Match dogs and sleds.

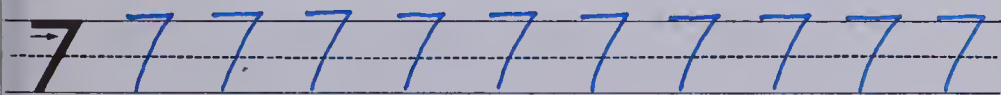


24 twenty-four

Three to seven; print 7

Extra Practice

Print 7.



How many?

• • • • •	7
• • •	6
• • •	5

• • •	7
• • •	6
• • •	7

Reinforcement

1. Use paper plates or cups as holders. Show a Numeral Card, after which the children put that many counters in a plate. Encourage them to tell what they are doing as they change numbers with each new card.



2 I took out two.

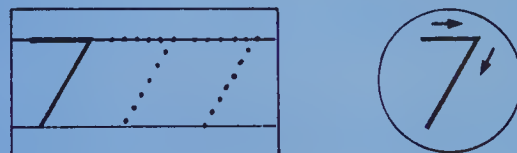
5 I put in three more.

0 I took out all of them, all five.

Some children may still clear their plates for each new number and start from one. As their experience and confidence increases, they will begin to count on or back from the existing set.

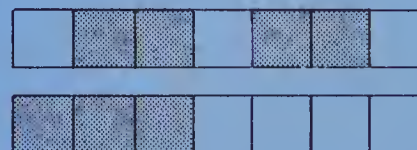
2. Have the children make their own hand boards by tracing both hands onto cardboard. Trace with palms up, as if holding objects. These hand boards can be used for making subsets of 7.

3. Have available at the Printing Centre Acetate Printing Cards and tracing Templates for the numeral 7 and the other numerals with a straight, downward stroke learned so far: 1, 4, and 5.



Enrichment

Using seven blocks, see how many two-colour patterns the children can think of. The patterns can be copied onto graph paper with crayons and used for oral descriptions. Some possible patterns are:



UNIT 2 LESSON 3

Objective N13

Recognize and print the numeral 8.

Vocabulary

Farm animals: roosters, hens, sheep, cows, pigs, etc.

Materials

T Numeral Cards 0 to 8

Placemats

Counters that join (Unifix or Multilink)

Introducing the Lesson

Flash Numeral Cards up to 7 as children use counters to make the sets.

Teaching the Lesson

Using a set of seven, add one more. "Now how many?" *Eight*. "Let's count them."

Use the chalkboard to show the shape of the numeral 8. "Make an 'S' and join the ends." Have the children trace it with you in the air, on the floor, and on their desks.

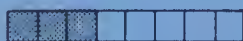
Flash the Numeral Cards to 8. Have the students read aloud. Vary by having them clap instead of calling out the number.

Ask each child to select two colours of counters that join to make a train of eight units.



Have each child "read" the pattern. *Three and five; eight in all*. Select several different trains with less than eight units to use for counting on activities.

Using a placemat, check each train by breaking off one colour and counting on the remaining blocks to eight.



Three.



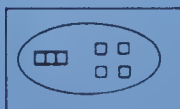
Four.



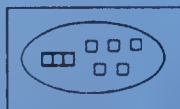
Five.



Six.



Seven.



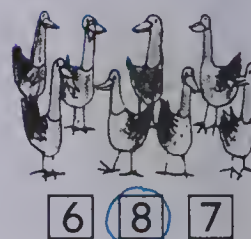
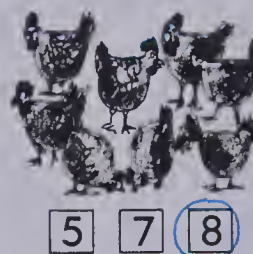
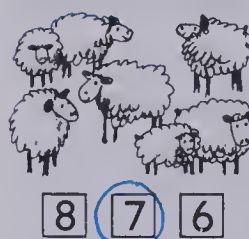
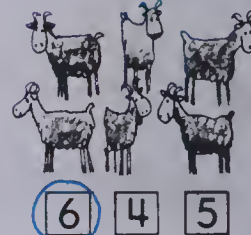
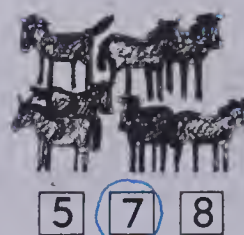
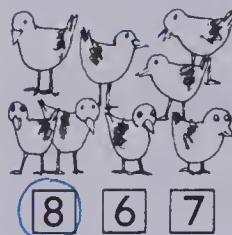
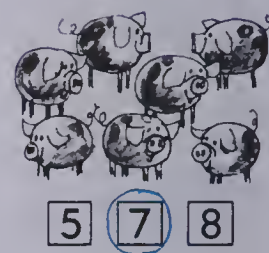
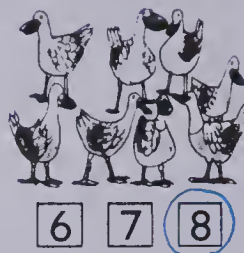
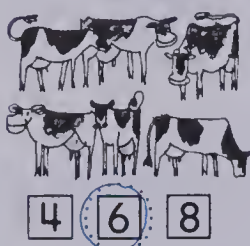
Eight.



8 eight



How many?

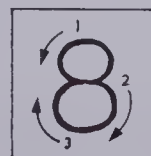


Four to eight; print 8

twenty-five 25

Using the Pages

- Discuss farm animals the children have seen. Have them identify animals on page 25.
- Point out one of the sets of eight animals pictured. Name the subsets of this set by counting on. (Cover three animals and count the remaining 5.)
- Review the tracing pattern for the numeral 8, "Make an 'S' and join the ends."



- Most children should be familiar with "How many?" exercises, but they may require a chalkboard example for "Draw the eggs 0."

How many?



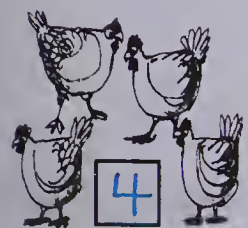
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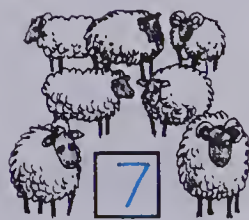
8



5



4

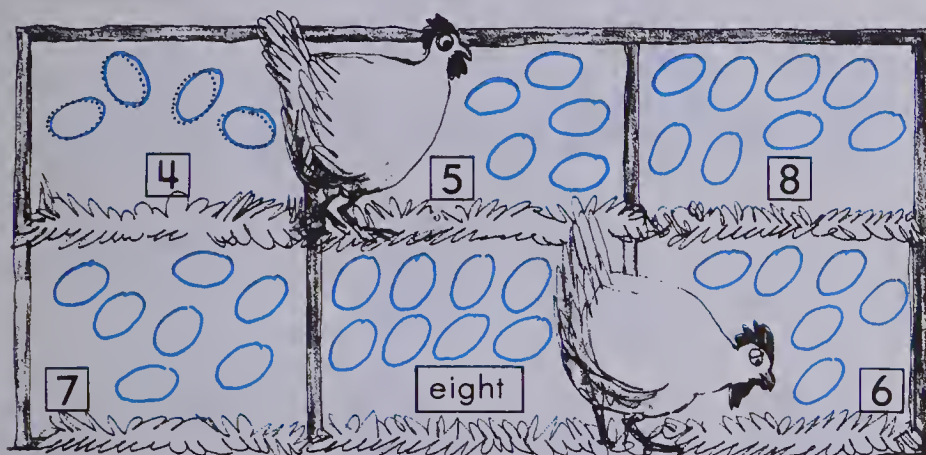


7



8

Draw the eggs ○.

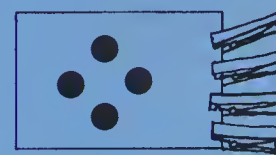
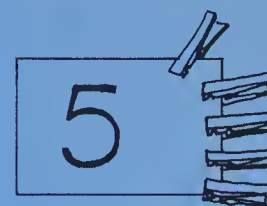


26 twenty-six

Four to eight; print 8

Reinforcement

1. Using Dot Pattern Cards or Numeral Cards and clothespins have the children match sets.



2. Provide each pupil with a pencil, paper, and crayons. Review the colours, if necessary. Show the students how to fold their paper into eight "boxes". Ask them to number their boxes 1 to 8 and to draw a plate in each box. Say (or print on the chalkboard):

"In box 1, draw 1 yellow banana."

"In box 2, draw 2 oranges; (continue in parallel fashion) 3 red apples, 4 purple plums, 5 green apples, 6 yellow lemons, 7 red cherries, 8 green grapes."

Enrichment

Provide a worksheet of eight "boxes" with fewer than eight objects in each. Have the children add on so that there are eight objects in each box.

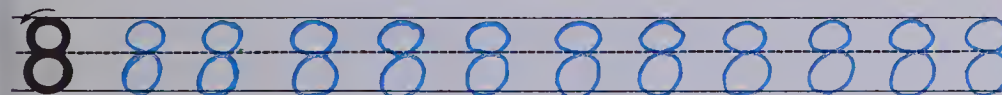
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Extra Practice

Print 8.

Worksheet N13

Pages 25-26



How many?



8



7



8



6



8



5

UNIT 2 LESSON 4

Objective N14

Recognize and print the numeral 9.

Vocabulary

Animals of the woods: squirrels, deer, bears, snakes, etc.

Direction words: Find the...

Materials

Counters: macaroni

P* and T Numeral Cards 0 to 9

Placemats

Dice with numerals 4 to 9 on faces

(Put a dot or line under 6 and 9 for clarity.)

Crayons

Introducing the Lesson

Using placemats, counters, and Numeral Cards review “one more than . Have one student build a set and count it; then the others build a set with one more than the first one. Use Numeral Cards 0 to 8 to label the sets of counters.

Teaching the Lesson

Build and label a set of eight counters. Ask for one more than eight. Show the numeral 9 card and give one to each child. Trace the numeral with the children, doing the round stroke first, then the downstroke “around and down”.

Play “Roll and Make” (as in Lesson 1 of this unit) using dice, counters, placemats, and cards.

Either you or a student claps zero to nine times. Other students then hold up cards to show how many, or make matching sets with counters.

Encourage silent counting rather than counting aloud with each clap.

Practise counting on orally to 9. Use T Numeral Cards, turn one over, and count on from there. **4** Four... five, six, seven, eight nine. Repeat, using counters and mats.

Have the students use nine counters to make the shape of a nine.



9 nine



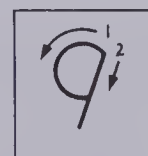
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Circle 9	
Circle 9	
Circle 9	
Circle 9	
Circle 9	

Nine; print 9

twenty-seven 27

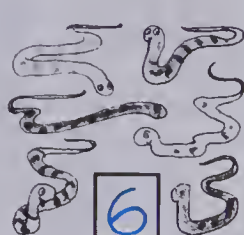
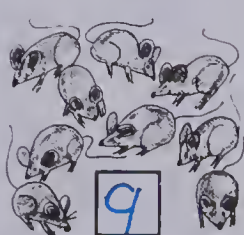
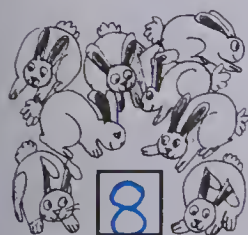
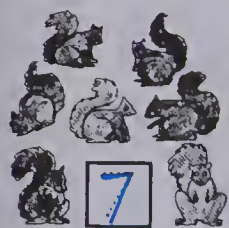
Using the Pages

- Discuss the animals on page 27. Count the patterns for nine: three, three, and three; eight and one more.
- Trace the pattern for the numeral 9. Emphasize that children should make the “C” shape first, then the “stick”, without lifting the pencil.

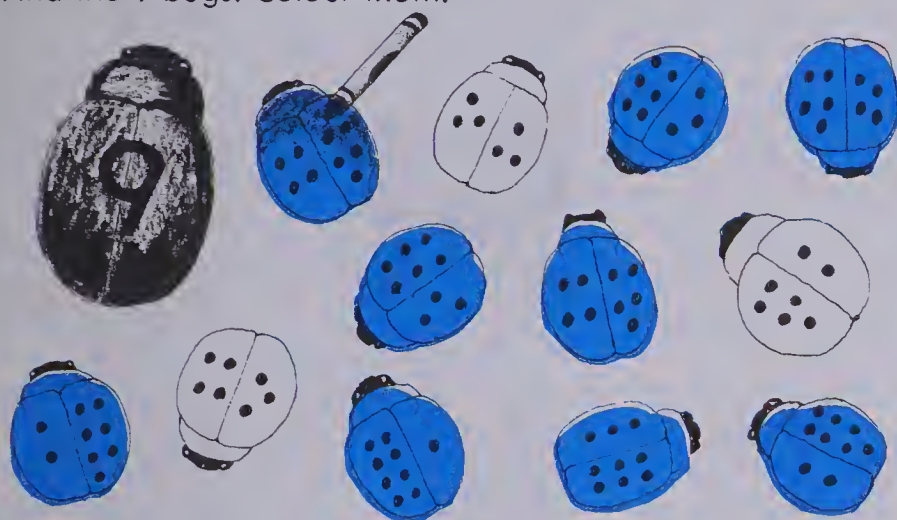


- Review the directions “Circle...” and “How many....”
- For the ladybug exercise on page 28, ask the children to look for the baby 9-bugs by counting the dots on their backs. Tell them to colour bugs with nine dots to help the mother find them.

How many?



Find the 9-bugs. Colour them.

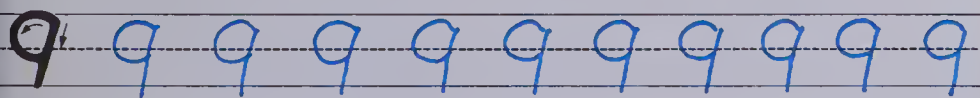


28 twenty-eight

Six to nine; print 9

Extra Practice

Print 9.



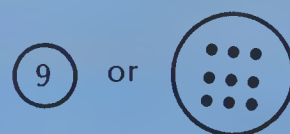
How many?

.....	9
.....	9
.....	8

.....	9
.....	7
.....	9

Reinforcement

1. Have the children build sets of a given size

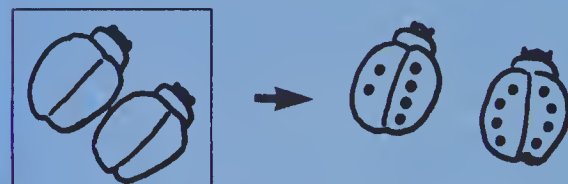


using paper plates and macaroni.

2. For children who are having difficulty with the counter-clockwise circular motion (used in printing 9, 0, 6, 8, 5, a, c, d, g, o) provide at the Printing Centre paper and a circle template with a starting dot and a direction arrow for extra reinforcement of the motor pattern.



3. Provide a worksheet of two or three ladybugs. Have the students put up to nine dots on each bug, in the pattern of their choice, and cut out the bugs.



Collect all the cut-out bugs and put them in a box along with nine ladybugs having the numerals 1 to 9 on them. Use these for a classroom sorting game.

Enrichment

With shapes cut from construction paper, ask the children to make a design of nine shapes. First the children should arrange the shapes on paper. When they have a pleasing design, they can paste the shapes to the paper.

(Prepare the shapes ahead of time by running off a shape stencil on various coloured sheets of construction paper).



Objective N15

Recognize and print the numeral 10.

Vocabulary

Birds, eggs

More than 10, less than 10

Materials

T Numeral Cards 0 to 10

Counters: pennies*

Hands placemats

Introducing the Lesson

Ask the children to show fingers to match a given number up to nine, e.g., "Six." Do this orally and with Numeral Cards to 9.

Teaching the Lesson


Ask, "How many fingers in all?" Count to check. Show the Numeral Card for 10. Trace the numeral with the children, saying, "Ten—a one and a zero." Have the children practise tracing one then zero in left-right order in the air. The place-value interpretations are developed later.

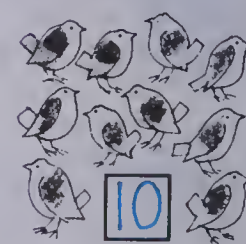
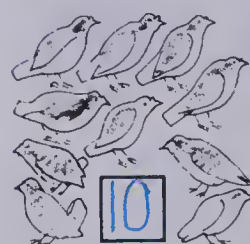
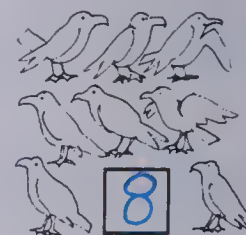
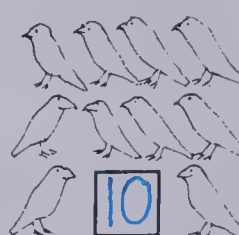
Using a hands mat and piles of pennies have the students check the piles to see which ones have ten, less than ten, or more than ten—by trying to place a penny on each finger. "Put one penny on each finger. Are there ten pennies? How many are there?" *Eight*. "Eight is less than ten. How many more pennies do we need to get ten?" *Two*. "Good—nine, ten," placing two more pennies on the fingers.

Give each pupil a hands placemat. Flash Numeral Cards as the students build pennies on the fingers of their mat. Each time, count on with pennies to 10.

Have the children turn over their mats and practise grouping their pennies in sets of various sizes. Start with sets of two or three. "Put ten pennies on your mat. Now separate them into groups of two. How many groups of two did you get? Are there any pennies left over?" Repeat.




How many birds  ?



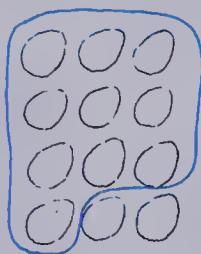
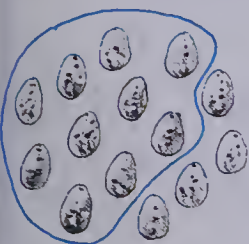
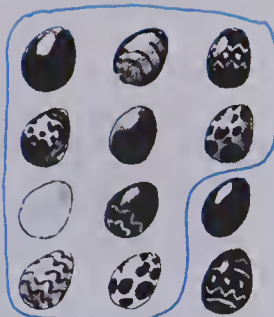
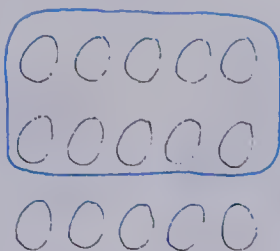
Five to ten; print 10


twenty-nine 29

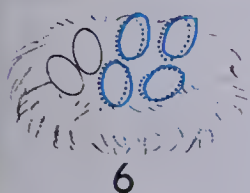
Using the Pages

- Since the children have had experiences printing one and zero separately, emphasize the order of printing one and zero and the use of two dots as starting points for tracing the one, then the zero.
- Review the method for the "How many birds  ?" exercise on page 29.
- Do a chalkboard example of "Circle sets of 10" at the top of page 30.
- The nests exercise at the bottom of page 30 emphasizes counting on. Ask, "How many eggs are supposed to be in the nest? How many are there already? How many more are needed? Count to check." Less able children may need help with the exercise.

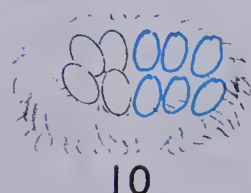
Circle sets of 10.



Draw the eggs .



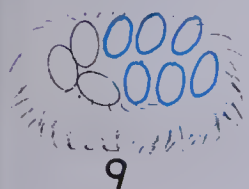
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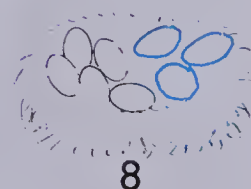
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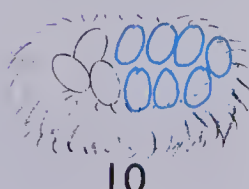
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9



8



10

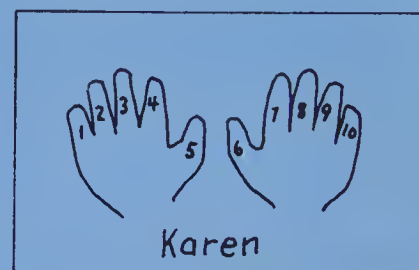


30 thirty

Six to ten; print 10

Reinforcement

1. Direct the children to trace both of their hands onto paper. Label the fingers from 1 to 10. These hands can be displayed in groups around the room and used for oral counting practice as well as an introduction to counting and grouping by tens.

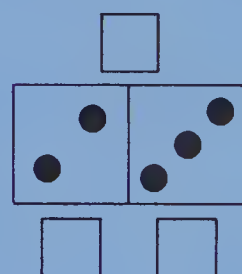
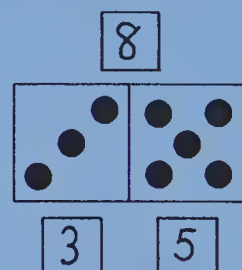


"How many fingers in all?"

2. For additional printing practice of the numerals 6 to 10, provide Acetate Printing Cards and Templates at the Printing Centre.

Enrichment

Using a worksheet of dominoes, ask the students to label how many dots in all, then how many dots on each side.



Provide a real set of dominoes, if possible, as an introduction and follow-up game. Use the regular domino rules.

Extra Practice

Print the numerals.

Worksheet N15

Pages 29-30

6 6 6 6 6 6 6 6 6 6 6

7 7 7 7 7 7 7 7 7 7 7

8 8 8 8 8 8 8 8 8 8 8

9 9 9 9 9 9 9 9 9 9 9

10 10 10 10 10 10 10 10 10 10

Objective N16

Identify a set that is less than another.

Vocabulary

Animals: fish, turtles, frogs, kittens, dogs, etc.

Less than, fewer than, not as many

More than, greater than, is equal to

Direction words: Which set has less?

Materials

Counters: buttons* or beans

Paper plates or mats

Small objects

Pennies

Price tags to 10¢

Introducing the Lesson

Ask each student to make a set with *up to ten* counters, and hide it under the plate (or mat). Make a set of five counters and ask those who also have five counters under their plates to turn over the plates and show them. Check to see whether they have five. Remove those plates or have the students put them away.

Next ask who has more than five counters under their plates. Have the students show them. Count them to check. Remove those plates.

Teaching the Lesson

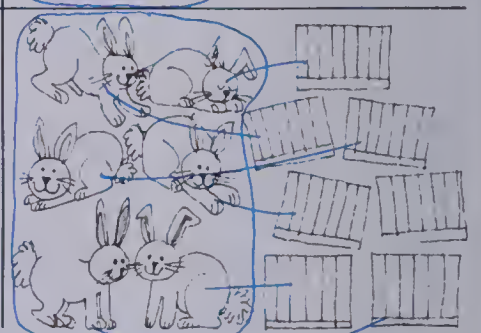
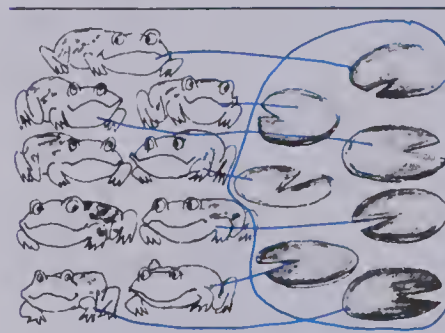
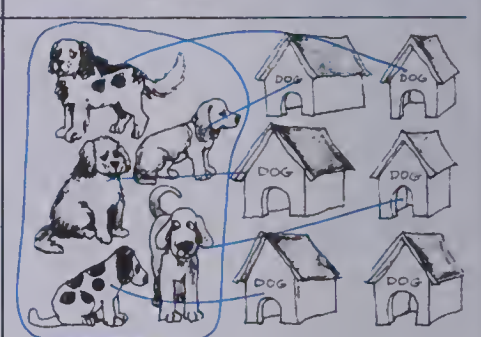
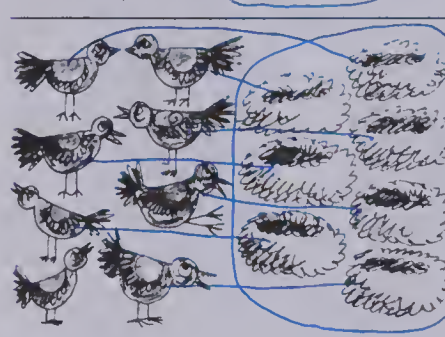
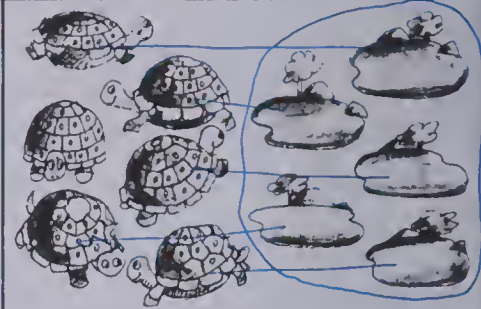
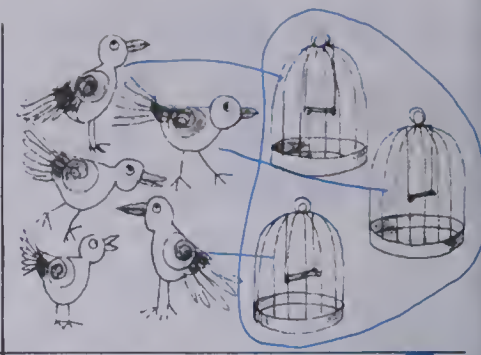
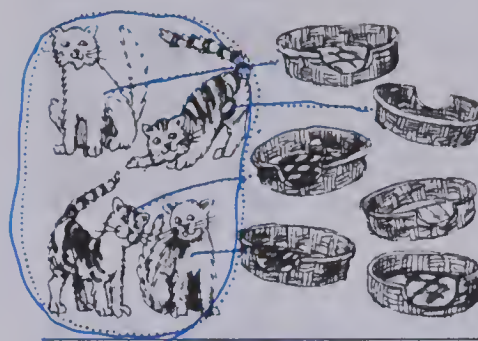
Ask each student who still has a plate how many counters it hides. They are to show them and describe the relationship. *I have three, and three is not as many as the five you have.* Use the term "is less than" after each of the student's descriptions: "You have two. You have less than I have, because two is less than five."

Choose two small objects, give each a price tag, and have a child show how much each costs using pennies. Compare prices and sets of pennies to determine which object costs less.

Use one-to-one pairing of pennies and counting to check which of two sets is less (has fewer objects).



Which set has less?



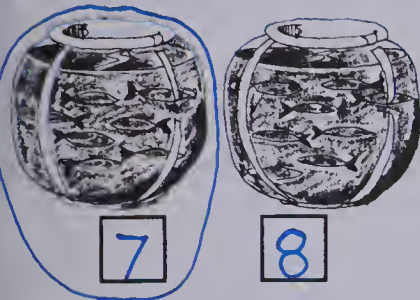
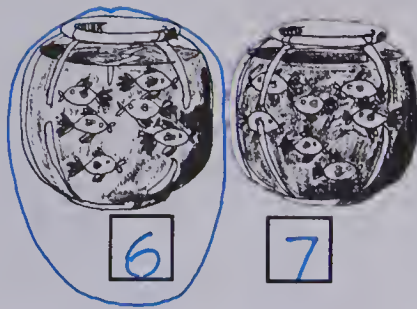
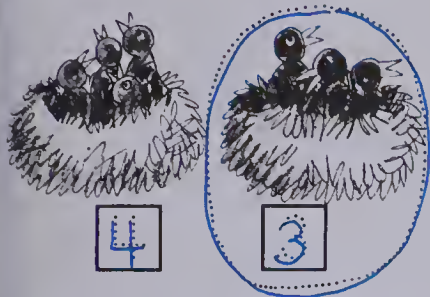
Less

thirty-one 31

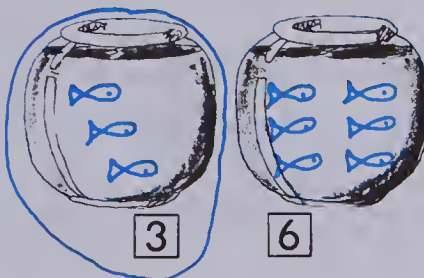
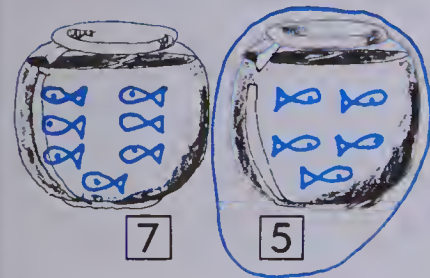
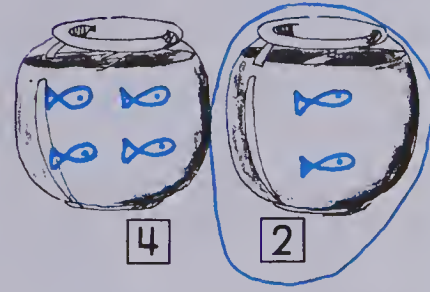
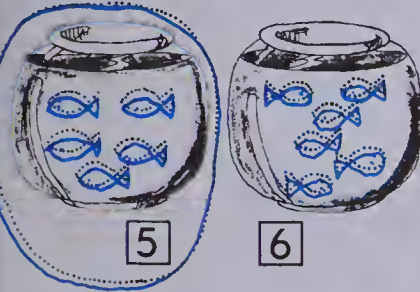
Using the Pages

- In preparation for page 31, use a chalkboard example to show the students how to match sets one-to-one by drawing a line between corresponding objects. Then have them identify and circle the set with less.
- For the top of page 32, review finding and recording "How many?" and then circling the set with less.
- For the bottom of page 32, review the directions for "Draw..." using fish in a bowl as an example. After both sets of fish have been drawn, ask them to circle the set which is less. Less able children may need help with this exercise.

How many? Which set has less?



Draw the fish in the bowls.
Which bowl has less?









32 thirty-two

Less

Reinforcement

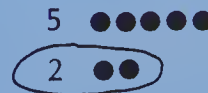
1. Use Picture Set Cards, Dot Pattern Cards (geometric and scattered), and a board with "less," "equal," and "more" printed on it.

		
less	equal	more
 		 

Choose one picture set to compare with the others. Ask the students to place cards on the board according to which sets are less than, more than, or equal to the first set.

2. Call out pairs of numbers. Ask the students to print each pair and then circle the number which is less.
"Five, two." — 5, 2

Encourage children who are having difficulty to draw dots or sticks to show each set.

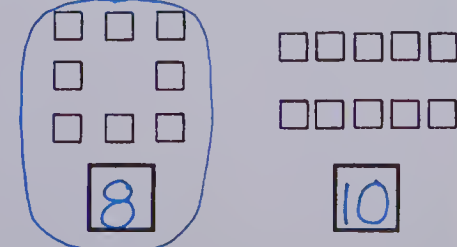
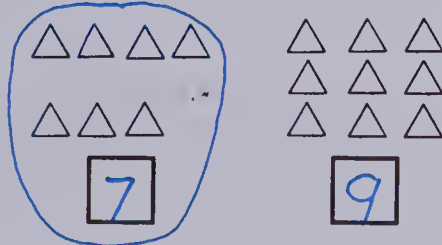
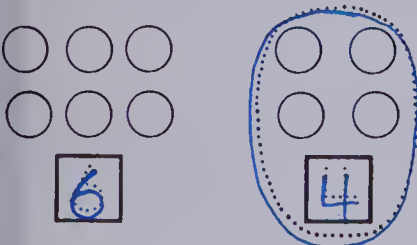


Enrichment

Having a deck of cards with the face cards removed, pairs of students can play a comparison game by finding which card is less. Deal out all of the cards face down. Each player turns over a card at the same time. The one with the lesser number takes both cards. Later try the game with three or four players. Establish rules ahead of time for what happens when the same number turns up.

Extra Practice

Which set has less?



Worksheet N16

Pages 31-32

UNIT 2 LESSON 7

Objective N17

Identify and construct a set with one less than another set.

Vocabulary

Water animals: starfish, crab, pelican, etc.
One less than, take away one

Materials


Small cracker or cookie for each child
Paper plates
Counters (Unifix cubes)
P* and T Numeral Cards 0 to 10

Introducing the Lesson

Count a set of ten crackers onto a plate. Pass the plate around. As each child takes and eats one, ask how many there are now. Count to check, then pass the plate to the next child. Refill the plate as necessary, emphasizing "one less is". Six crackers; one less is five....

Teaching the Lesson

Try orally with several numbers:
"Seven; one less is _____."

Give out plates, counters, and P Numeral Cards to 10. Ask the students to build a set and use a Numeral Card to label it.  Next ask the students to build a set with 1 less than 6 and label it.

Have each child build a set of ten counters. Together, break off one and say how many there are left. Repeat the process silently, holding up Numeral Cards to show how many.

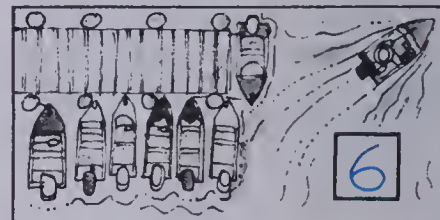
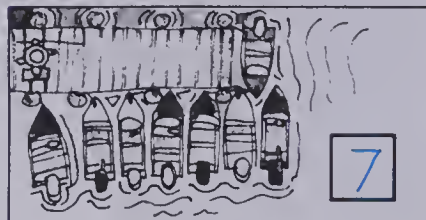
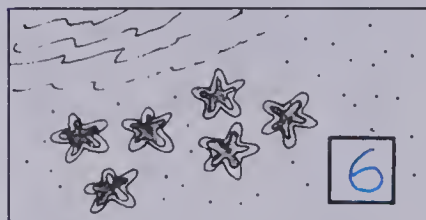
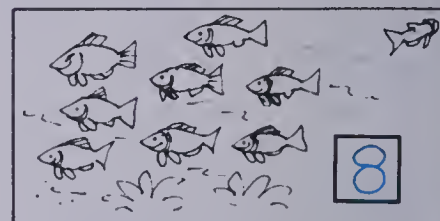
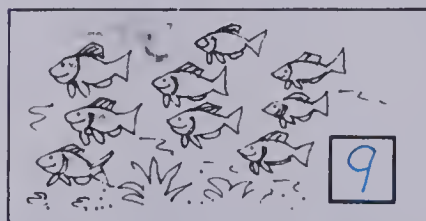
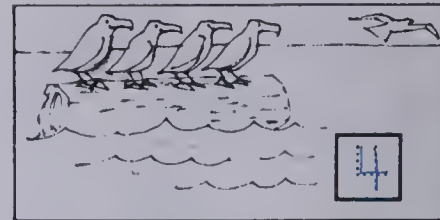
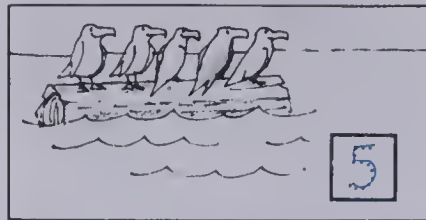
Using paper plates to help to define the set, ask the children to show a given number of cubes and label the set on the plate with a Numeral Card. Next they should remove one and relabel the set on the plate.

Working in pairs, have one student build a set and label it while the other builds a set with one less and labels it.

Flash T Numeral Cards; the students are to read and whisper the number. Then ask them to say aloud the number that is one less.

How many?

Now how many?



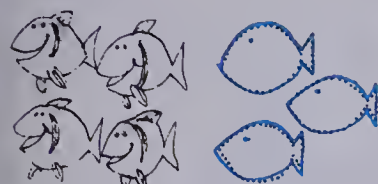
One less

thirty-three 33

Using the Pages

- For page 33, ask the students to tell aloud what is happening in each pair of pictures before recording their answers, e.g., *Five seagulls are sitting on a log. One seagull flies away. Now there is one less than five. Now there are only four seagulls.*
- For page 34, use a chalkboard example where a student draws a set with one less than the original set and writes how many are left. Ask the less able children to cross out one picture and write how many are left.

Draw a set with one less.



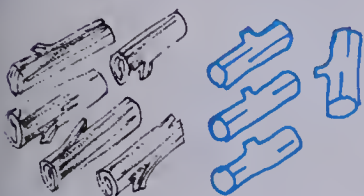
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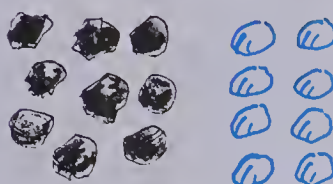
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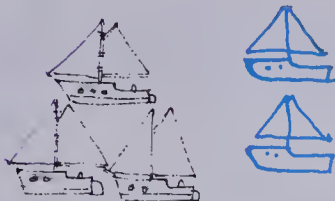
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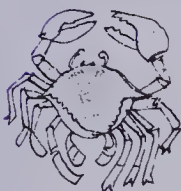
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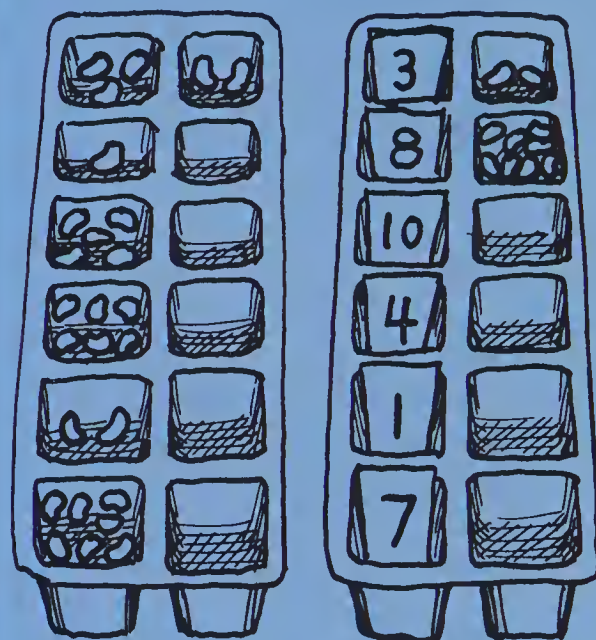
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34 thirty-four

One less

Reinforcement

1. Use egg cartons, Numeral Cards, and beans or macaroni. The students put sets of beans down one side, then count and build one less beside each. Numeral Cards can be used to label these sets.



2. Provide paper, crayons, and a pencil. Have the paper folded in eight. Give oral or printed directions for the left row of boxes.

Draw 9 apples.

Draw 6 balloons.

Draw 8 rocks.

Draw 10 fish.

○○○○○	
○○○○○	
○○○○○	
○○○○○	

Ask the children to draw beside each a set with one less. Next have them count and label each box.

Enrichment

Ask the students to make a list of at least five words from their reading sight vocabulary or the names of children in the class. Then they are to find and print a word that has one letter less than the original word. Use graph paper, if possible.

Jeremy
Sarah

Paul
Jim

S	t	e	v	e
J	o	h	n	

Extra Practice

Draw a set with one less.



6

5



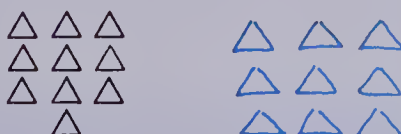
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10

9

Worksheet N17

Pages 33-34

UNIT 2 LESSON 8

Objective GR1

Interpret and construct simple graphs (pictograph and bar graph).

Vocabulary

Vocabulary of comparison: more than, less than, the same number as, an equal number

Ordering vocabulary: most, least, in order from least to greatest

Materials

Stickers: one per child

Chart paper

Blocks: one per child (Unifix or larger)

Introducing the Lesson

If this is the first time the children have worked with graphs, more than one lesson on the topic may be needed.

Using chart paper, make a list with the children of all the types of fruit they can think of (or vegetables, or ice cream...). Provide each child with a sticker. Ask each child to decide which is his or her favourite. Call each name on the list. Have the students come up and stick their sticker beside their favourite when it is called. Make sure the first student in any group places the sticker properly at the base line of the chart.

Provide each student with one block. Make labels for all the different colours of eyes (or hair, or socks, ...) in the class and attach them to a table. Call each colour. Each student with that eye colour brings up a block and stacks it on the table by the corresponding label.

Teaching the Lesson

Upon completion of each graph, encourage the following types of questions and discussion.

"How many students have blue eyes? — brown eyes?"

"Which colour of eyes do most/least students have?"

"Put the labels and piles of blocks in order from least to greatest."

"How can we tell from the blocks how many students are here today?"



How many?

10

9

7

4

5

8

8

6

0

Pictographs; problem solving

thirty-five 35

Using the Pages

- Page 35 involves interpreting a simple pictograph. Discuss the graph using the same types of questions as in your discussion of the eye-colour graph. Encourage the children to recognize that they must count the number in each row. The length of each row will not help—7 dogs, 9 fish, but the row of dogs is longer.
- Page 36 involves constructing a simple bar graph. This graph is quite different in that the concept of a unit is used, and now length can be used for comparisons. As the pupils become familiar with more graph formats, encourage them to describe these differences. Make sure the students understand the direction "Colour a box for each pet."

Problem Solving Activities

Assign Level 1, Unit 2

Objective N18

Order sets and numerals 0 to 10.

Vocabulary

In order from least to greatest (lowest number to highest, smallest number to largest)

Materials

T Numeral Cards 0 to 10

Cuisenaire rods* or Unifix 1 to 10 rods

Jar or opaque container and counters

Long piece of heavy string, rope, or ribbon

Introducing the Lesson

Arrange Cuisenaire rods or Unifix blocks in trains of up to 10 units. Have the children order the trains from 1 to 10.

Teaching the Lesson

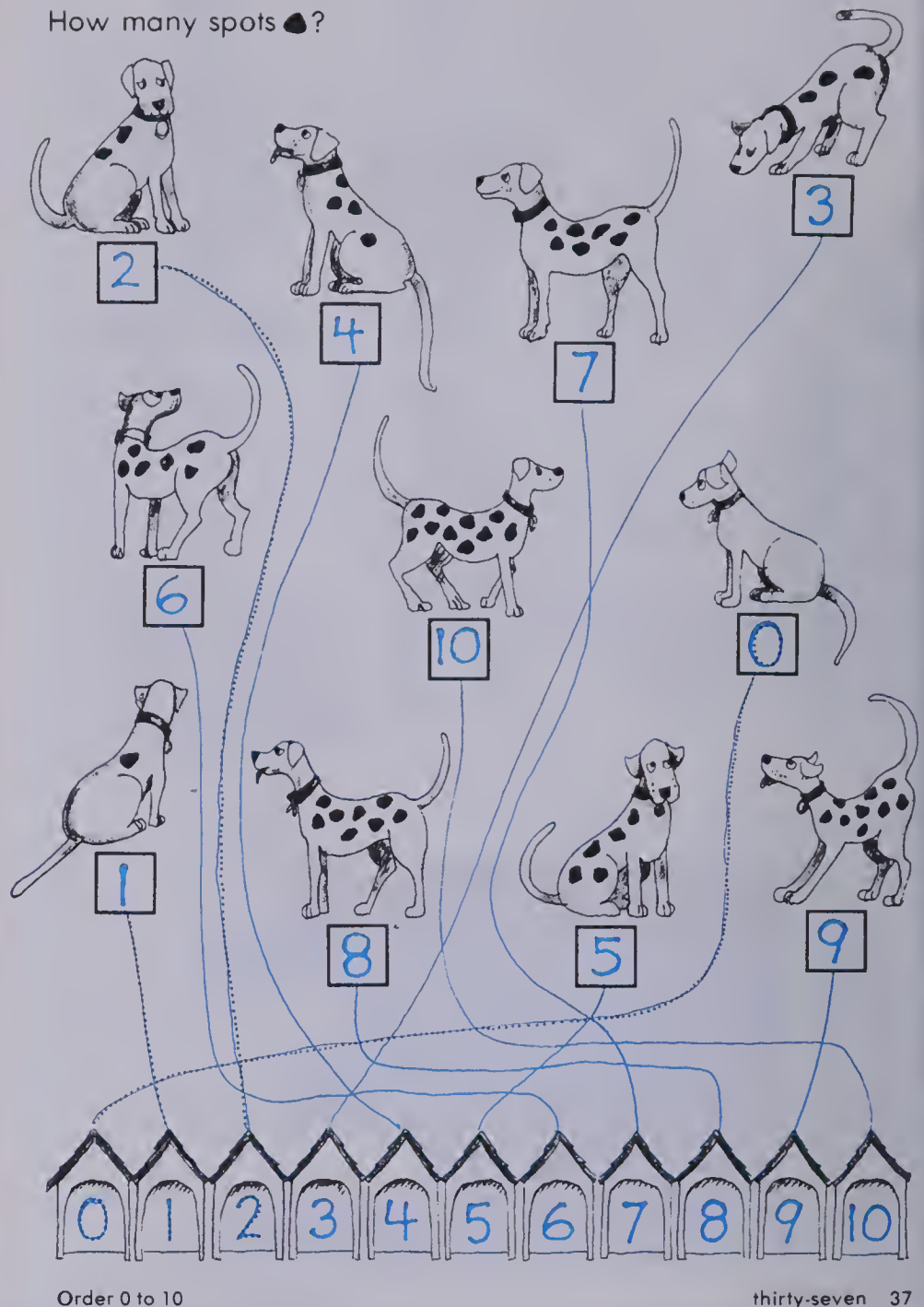
Have the students practise counting forward aloud by ones to beyond 20. Encourage counting on by having the students join in as you count, starting with different numbers, e.g., 0, 3, 6, 2, 5, 8, and so on. Confident children will join in after hearing the first number. Other children will need to hear several numbers in the sequence.

Use an opaque container and counters. Drop counters in the container as the students count each drop. Remove and add counters, varying the starting number each time. Use imaginary starting quantities with children who count easily beyond 20 or 30. "There are fifty-six counters in here. Now how many?" *Fifty-seven, fifty-eight.*

As an introduction to counting on the number line, stretch a string or rope across the floor. Have the students come up and hop along the string from left to right with the others counting the hops. Emphasize zero as the starting point. "Has Peter jumped yet?" *No, he is at zero. He has jumped zero times.*

Repeat the hopping activity with students placing T Numeral Cards to show each jump.

How many spots ●?



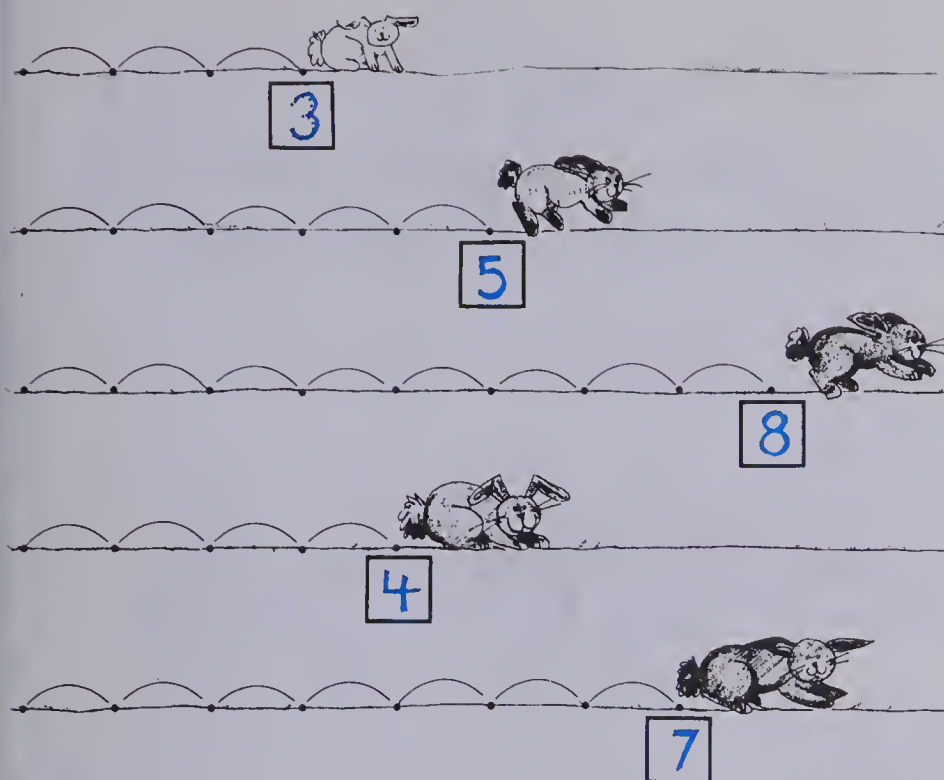
Order 0 to 10

thirty-seven 37

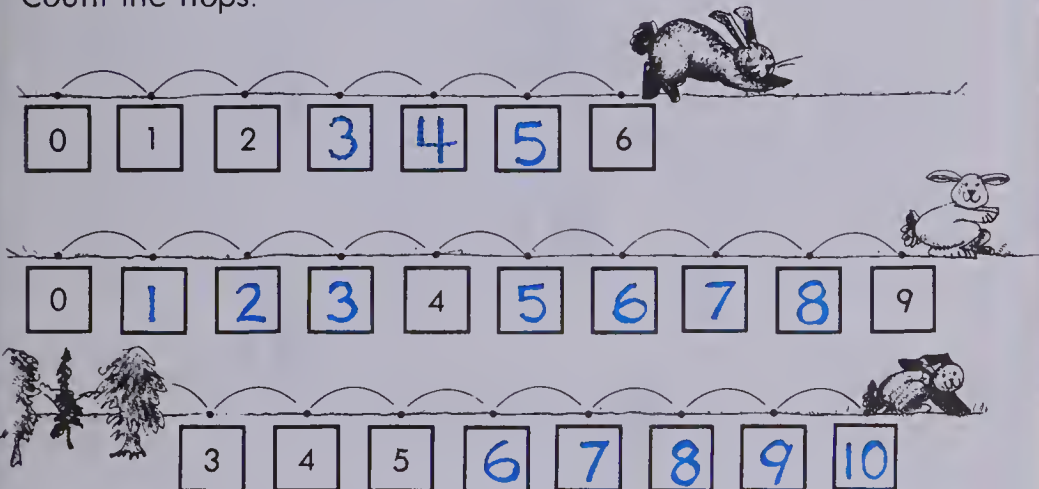
Using the Pages

- Ask the students to count the spots on each dog pictured on page 37 and record how many. Then they should join each dog to a house below, in order from 0 to 10.
- For the top of page 38, ask the students to write how many hops in all. Emphasize the starting point as zero jumps. Have them trace each jump and count.
- At the bottom of page 38, the student is to count and print the numeral for each jump. Point out the last example where the rabbit has already jumped a few times in the trees, so they must count on from 3.

How many hops . . . ?



Count the hops.

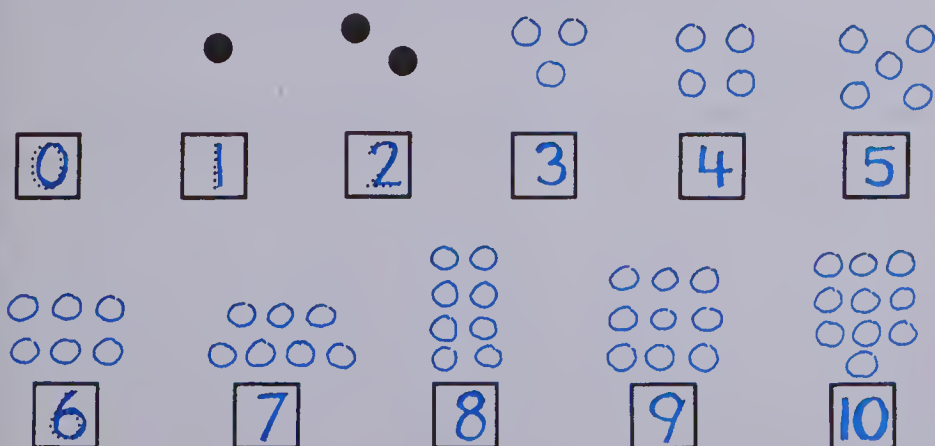


38 thirty-eight

Order 0 to 10; number lines

Extra Practice

Count. Draw the sets.



Worksheet N18

Pages 37-38

Reinforcement

1. Prepare a worksheet of sets of objects and numerals for matching, comparing, and ordering games. Run it off on construction paper. Have the students cut the pieces out. Provide envelopes for storing the pieces.

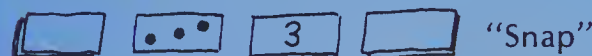
☆	♡♡	●●●	◆◆
□□□	///	○○○	
○○○	●●●	1	2
3	4	5	6
7	8	9	10
0	zero	one	two
three	four	five	six
seven	eight	nine	ten

Activities or games

- Match sets and numerals.
- Order Numeral Cards from 0 to 10.
- Order set cards from 0 to 10.
- Name the greater of two cards.
- Name the lesser of two cards.

2. Using the set cards described above, direct these activities or games.

- Play "Snap". Make two piles of cards. Turn over two cards at once. If they match, say "Snap!" and take the turned-over piles.



- Play "Find It." Turn up a card and find a matching card.
- Take a card and find the number that is one greater.
- Take a card and find the number that is one less.

Enrichment

Using the set cards described in Reinforcement, direct these activities or games.

- Match sets and words. ☆ one
- Match numerals and words. 2 two
- Match sets, numerals, and words. ◆◆ 4 four
- Play "Concentration" with cards 0 to 5 (to start) and sets 0 to 5. Turn all cards face down. Take turns turning over two and trying to find a matching pair.
- Order words from 0 to 10.

Objective N19

Match sets, numerals, and words 0 to 10.

Vocabulary

Reading sight vocabulary: zero to ten

Materials

Word Cards 0 to 10

P and T Numeral Cards 0 to 10

Counters*

Wall Reference Charts for number words



Picture Set Cards to 10

Dot Pattern Cards (geometric* and scattered) 0 to 10

Introducing the Lesson

This lesson is a review of the unit with special reinforcement of sight words. Flash the Numeral Cards for 0 to 10. Ask the students to call out the numbers.

Place the cards in mixed order on the chalkboard ledge or on the floor. Ask one or two students to rearrange them in order from zero to ten.

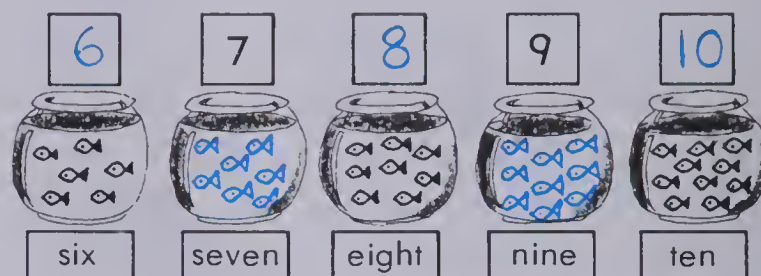
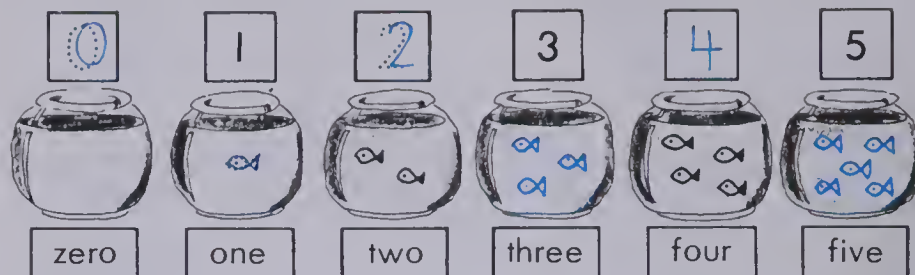
Teaching the Lesson

Using the Word Cards zero to ten in mixed order, ask the students to match the words to the (ordered) numerals.

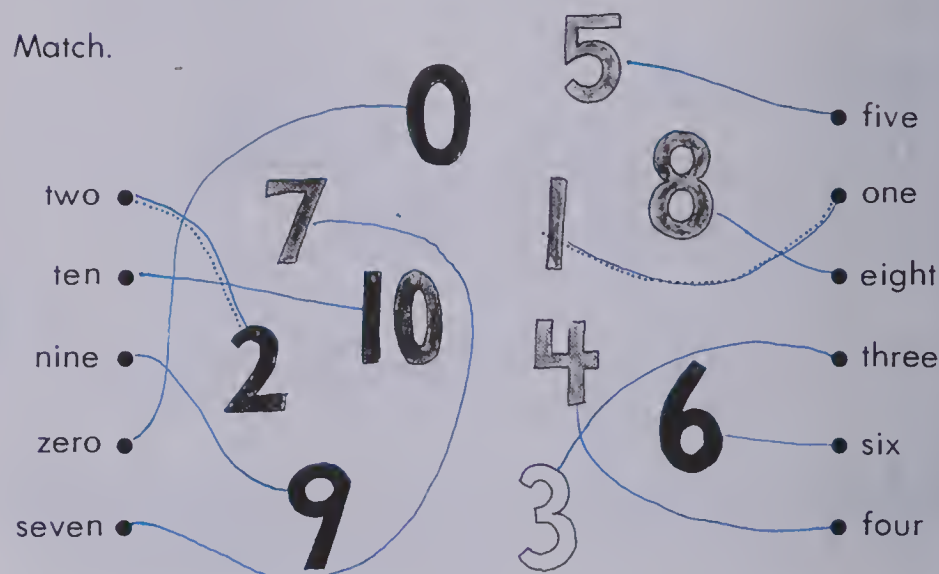
Have the pupils practise ordering the Word Cards alone. Provide Wall Reference Charts for the children to match words and numerals as a clue. Since reading levels and programs vary considerably, your own judgement is required on how to reinforce this number-sight vocabulary.

Using the Numeral Word Cards, Dot Pattern Cards (geometric and scattered), and Picture Set Cards, direct matching and ordering activities and games as suggested in Lesson 9 Reinforcement.

Print the numbers. Draw the sets.



Match.



Zero to ten

thirty-nine 39

Using the Page

- At the top of page 39, the student is to print the missing numeral or draw the missing set. To help the less able readers with the bottom matching exercise, words are provided. Point this out when introducing the matching task.

Enrichment

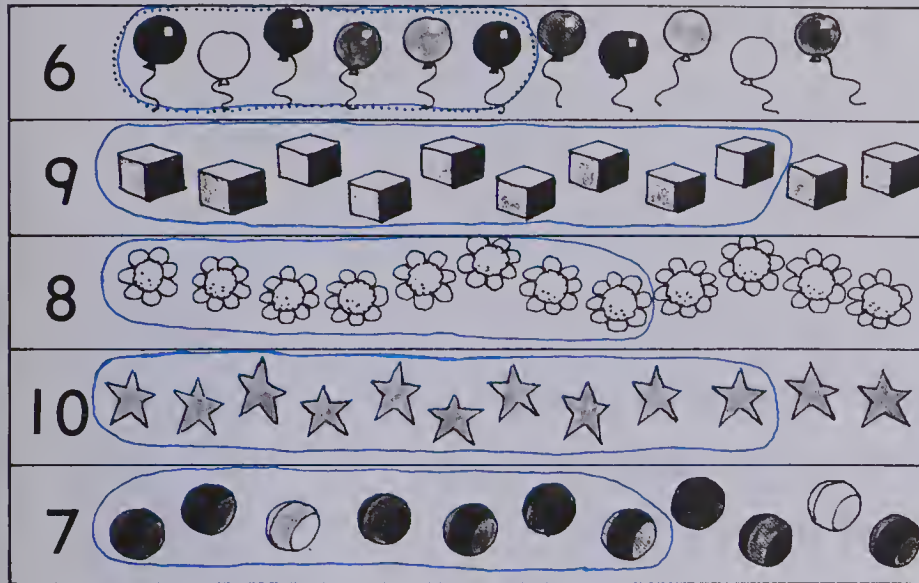
Scramble the letters of the number words from zero to ten on a worksheet. Ask the students to unscramble them and then to write them in order.

owt
vense
urfo
ozre

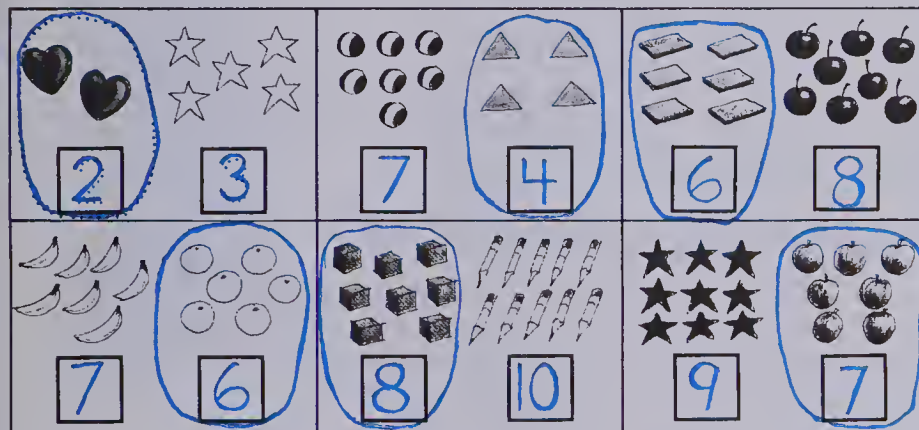
erteh
gieht
eno
nien

xsi
net
ifev

Circle.



Which set has less? Circle it.



Count.



Informal Assessment

1., 2., 3., 4., 5., 6.

See suggestions in Unit One, Lesson 10, Page 20, for six types of ways to informally assess the students.

Extend the examples to focus on the numbers 6 to 10 rather than 0 to 5.

In addition to those items, include the following.

7. Comparing

"Build a set with one less than mine."

"Which set has less?"

"Which is less, ten or seven?"

"Which number is less?" 6 or 8

8. Reading Number Names

(Enrichment)

"Match these number and word cards."

"Read these cards as I show them to you."

Give the printed directions: Draw five.

9. Interpreting Graphs

Construct a graph with the class. Ask questions of individual students later to check their understanding of the graph.

UNIT 2

TEST

Part 1: Count and colour a set of objects.

Part 2: Count and record how many. Compare the two sets of objects to find which has less. Circle it.

Part 3: Print the numerals 0 to 10 properly and in order.


UNIT 3

Addition

Theme: Finding Sums

Lesson	Objective		Pages
1	A1	Join two sets; recognize and use the symbol +.	41-42
2	A2	Recognize and use the symbol = in horizontal addition sentences.	43-44
3	A3	Use models to add and write horizontal addition sentences.	45-46
4	A4	Draw models for addition sentences to find the sum.	47-48
5	A5	Add, using vertical form.	49-50
6	A6	Add 1 in sums to 10.	51-52
7	A7	Add 2 in sums to 10.	53-54
8	A8	Add 0, 1, and 2 in sums to 10.	55-56
9	M1	Recognize and use the symbol ¢; add pennies.	57-58
10	A9	Recognize addition names for the numbers 5 to 9 using 0, 1, and 2 as addends.	59
Test		Addition facts to 5	60

Vocabulary

and
plus
and  more
add
join
put together
in all
altogether
pair
counting on
zero
none
empty
pennies
addition names for
numbers

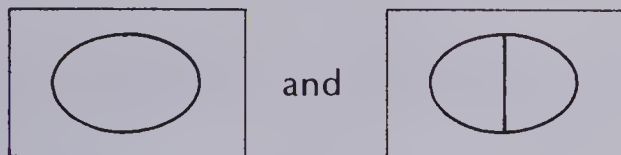
equals
balance
number sentence
across
up and down
one more
one greater
plus one
buy
pay
cost
price
coins
money

Printed Directions:

How many in all?
Add.
How many buttons?
Circle names for ...
How much?

Materials

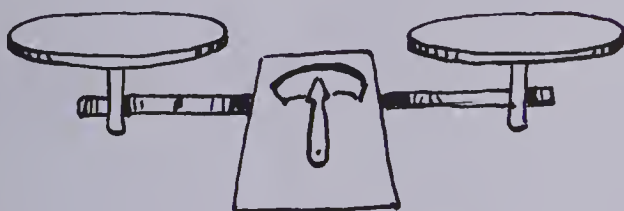
Placemats: two-sided, approx. 30 cm × 45 cm, for teacher and each pupil



Pupil P* and Teacher T Numeral Cards to 10
Sign Cards: Plus Card, Equals Card (6 cm × 9 cm) for teacher and each pupil



Scale balance or chart balance:



Hands placemats: (approx. 30 cm × 45 cm) for each pupil



Jacket or chart of a jacket with two pockets:



Addition Name Cards: (to sums of 10 and addends of +1, +2, or +0)

$$6 + 0$$

$$1 + 8$$

Number Sentence Cards: horizontal and vertical

$$4 + 2 = 6$$

$$\begin{array}{r} 4 \\ + 2 \\ \hline 6 \end{array}$$

Price tags: to 9¢

Picture Set Cards: for 3, 4, 5, 6



Number line to 20

Bingo cards: (numbers to 9 or 10)

2	8	4
9	6	7
5	1	3

pennies*
bingo chips*
plastic sticks*
regular game dice
beads
string
small objects
individual chalkboard
toy cars or vehicles
piggy bank
coloured cubes
linking cubes
beans (spray painted on one side)
bag
paper plate
old magazines
crayons
paper
graph paper
paste
scissors

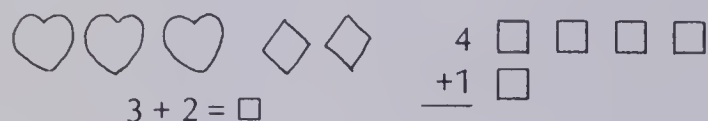
*Available in Houghton Mifflin K-2 Activity Kit

About This Unit

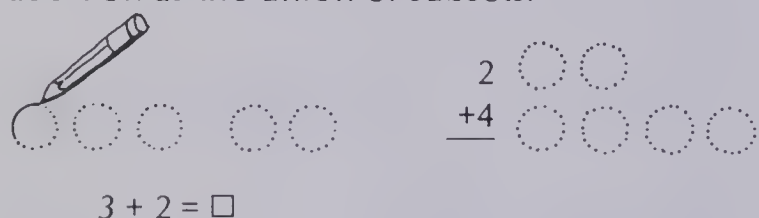
Unit 3 introduces children to the operation of addition, to the addition symbol, and to the open addition sentence. The emphases are on the concept of addition, the real-life applications of addition, the translation of concrete and illustrated addition situations into addition number sentences, and the methods of interpreting and solving open sentences (counting, using illustrations, and drawing or building a model). No stress is placed, at this stage, on the memorization of addition combinations.

The Use of Models

Throughout the unit, addition sentences are accompanied by an illustration to provide a counting model for finding sums.



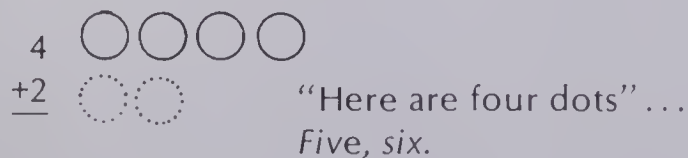
In conjunction with the illustrations, students are taught to draw their own models to help find sums, and to reinforce the meaning of addition as the union of subsets.



To establish the idea of adding on to an initial set, some exercises involve drawing the subset that is added on.



For some pupils, this will introduce the idea of counting on and tallying.



Some students will continue to rely on counting each picture to get the total of six. Both methods are valid, though the counting on method is more efficient. As students gain more confidence and understanding of

numbers, they gradually begin to rely on these more abstract and efficient methods, and eventually have no need for models at all. Read more about counting on in the introduction to Unit 2.

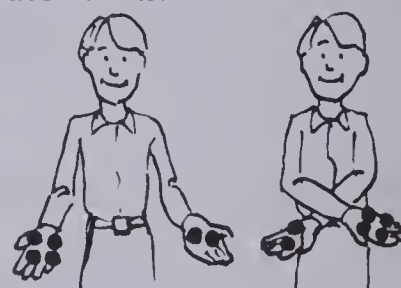
The Organization of Addition Facts and Ideas

In Unit 3, a variety of addition combinations to sums of 10 is used in the development of the meaning of addition number sentences. Addends of 1, 2, and 0 are taught, in conjunction with counting skills.

The addition examples that are used with illustrations in this unit will appear again in Units 5, 6, and 7 where attention is turned to the mastery of basic facts. In those units, facts are organized by sums. For instance, one lesson deals with all the addition names for 7 ($0+7$, $1+6$, $2+5$, $4+3$, $5+2$, $6+1$, $7+0$). The concept of names for numbers is introduced in this unit, but is more thoroughly developed in Units 5, 6, and 7.

The commutative (order) property of addition is developed in oral lessons and through the use of materials, but is not developed on pupil pages until later units.

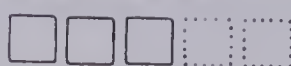
"Four and two;
Two and four;
Six in all, either
way."



Both action and non-action addition situations are demonstrated in the lessons, while the pupil page develops the part/whole relationship of subsets and sets, addends and sums. This approach also is used in the subtraction units and helps to heighten an intuitive grasp of the relationship between the two operations.



$3 + 2 = 5$
Real action
situation



$3 + 2 = 5$
Action of
joining subsets



$3 + 2 = \square$
Non-action de-
scription of parts
and whole

The Teaching Sequence

In the lessons accompanying each pupil page, concrete materials are suggested to develop the ideas and to stimulate the use of related vocabulary. It is important that the lesson materials and activities be done before the pupil pages, as many pages relate directly to these materials and activities.

Activity

“Four in this hand.
Two in this hand.
(Join hands.)
Six in all.”



Pupil page

$$4 + 2 = \square$$



Mathematical Vocabulary

Encourage the children to verbalize their ideas and interpretations of addition situations and number sentences. Many activities in the lesson sections provide opportunities for such verbalization. Not only does this feedback provide you with a means of assessing a student's understanding of the concepts and ideas you have presented, but also it helps to reinforce new vocabulary and to clarify and consolidate his or her understanding of the new ideas and symbols.

Unfamiliar, abstract vocabulary (such as *plus* and *equals*) should be introduced with more meaningful terms. For instance, $3 + 2 = \square$ can be read as “3 and 2 more is 5 in all” or “3 and 2 is 5” or “3 plus 2 equals 5.” Gradually, through pairing the familiar and unfamiliar vocabulary, students will understand and acquire facility with the more mathematical terms.

The *Teacher's Resource Book* often uses terms that are meant primarily for the teacher's use at this point, not necessarily for the children's use—for instance, *addend* and *sum*. Vocabulary for the student is listed under the vocabulary heading at the front of each unit and at the beginning of each lesson.

Activity Centre

1. Organize an Addition Centre in your classroom. The activities at the centre will require more space than a desk top, so you may want to designate a suitable classroom area for working. The activities available at the centre can be used in basically two ways:
 - a. to model a number name using materials,



- b. to find or write a number name to match a given model.



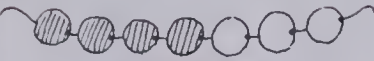

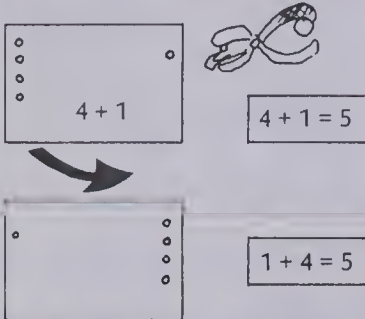


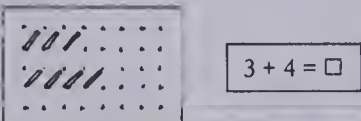
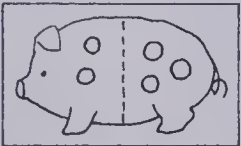


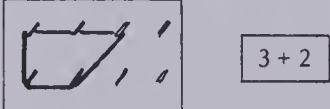
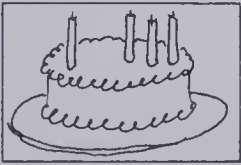

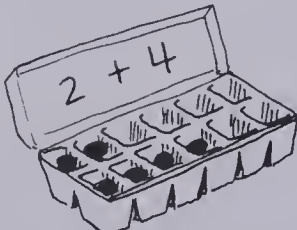

Addition number sentences also can be used.



Addition Name Cards to sums of 10, paper, and pencils should be readily available for use with each set of materials.

The following Addition Centre activities are meant to be used in conjunction with the paper-and-pencil activities suggested in the *Reinforcement* section of each lesson. These hands-on activities provide a kind of stimulation, motivation, and involvement that written activities cannot achieve.

Be sure to organize appropriate containers (such as boxes, manilla envelopes, etc.) or places (such as a large table or shelves) so that the children can be responsible for taking out and putting away the materials.

Activity	Materials	Pin cushions	
Bead necklaces  $4 + 3$	<ul style="list-style-type: none"> plastic or wooden beads in a variety of shapes and colours strings or shoelaces 	 $1 + 2$	<ul style="list-style-type: none"> foam or styrofoam pieces pins with plastic heads
Hole punching  $4 + 1 = 5$ $1 + 4 = 5$	<ul style="list-style-type: none"> cards (with a number name on one side) hand punch (Be sure the spring is not too stiff for little hands.) 	Block trains  $2 + 4 = \square$	<ul style="list-style-type: none"> blocks that join or pop beads
Plasticene marbles  $4 + 2$	<ul style="list-style-type: none"> Plasticene in various colours paper plates for holding sets of "marbles" 	Pegboards  $3 + 4 = \square$	<ul style="list-style-type: none"> pegboards pegs
Piggy banks  $2\text{¢} + 3\text{¢}$ $2\text{¢} + 3\text{¢} = 5\text{¢}$	<ul style="list-style-type: none"> pennies (or card penny shapes) piggy placemat (Use stiff cardboard or felt.) 	Clothesline  $2 + 3$	<ul style="list-style-type: none"> piece of rope clothespins
Stamps  $1 + 2$	<ul style="list-style-type: none"> ink pad set of stamps (animals, letters, names, etc.) paper for stamping 	Geoboards  $3 + 2$	<ul style="list-style-type: none"> geoboards elastics
Birthday cakes  $1 + 3$	<ul style="list-style-type: none"> cake placemats (card or felt) candles in different colours (Plasticene and sticks can be used ) 	Egg cartons  $2 + 4$	<ul style="list-style-type: none"> egg cartons large beads or blocks (If you have plenty of cartons, write the number name in or on the lid.)
		Toy cars  $1 + 4$	<ul style="list-style-type: none"> miniature plastic cars of several colours road place mat

2. Graphing Activities

a. *First and Last Name Graph*

Use a large sheet of graph paper or draw a grid onto chart paper. Ask each child to print his or her first and then last name using one letter per square (don't leave a space). Then make a record of how many letters in each name and in all.

Our Name Graph										
S	t	e	v	e	D	a	n	b	y	
H	e	a	t	h	e	r	J	o	n	e
D	a	v	i	d	R	o	b	e	r	t
S	u	e	L	e	e					s
K	e	l	l	y	M	a	n	n		

First Name	Last Name	Letters in all
5	5	10
7	5	12
5	7	12
3	3	6
5	4	9

b. Attendance Graph

Keep track of attendance for one week using stickers or colouring a square for each child. Use the graph for counting and comparing numbers above ten. Rows of stickers can be grouped into tens to make counting easier and to encourage counting on.




Monday

Tuesday




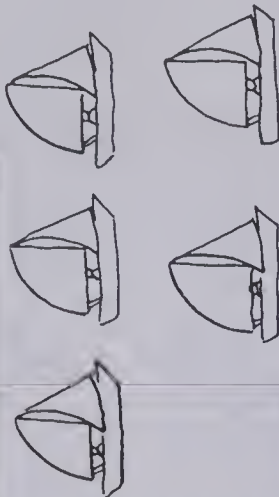
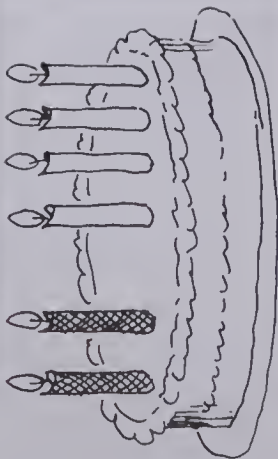
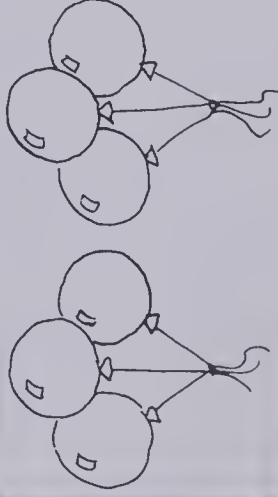
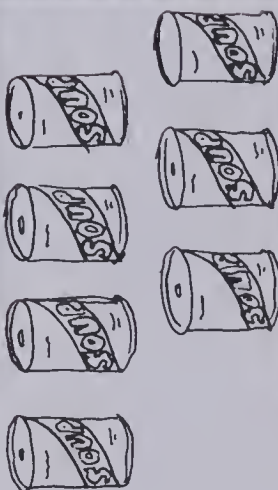
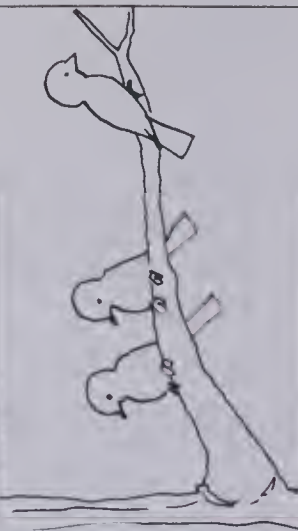
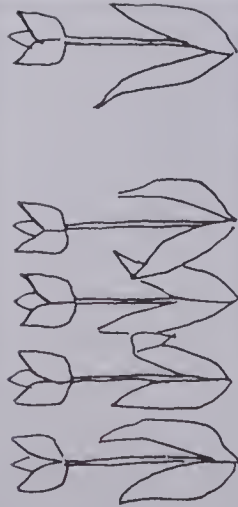
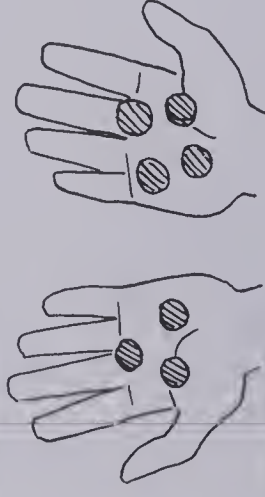
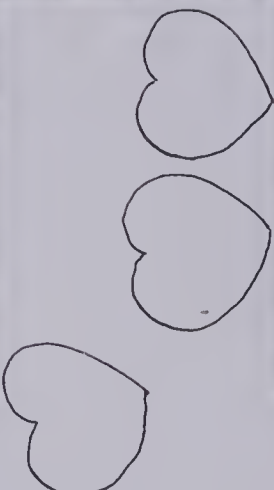
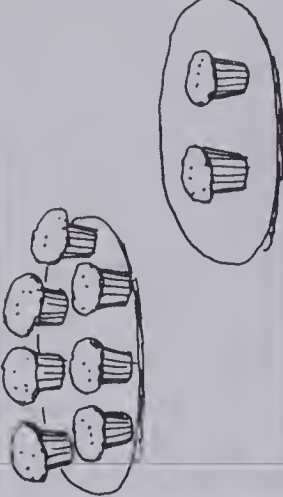
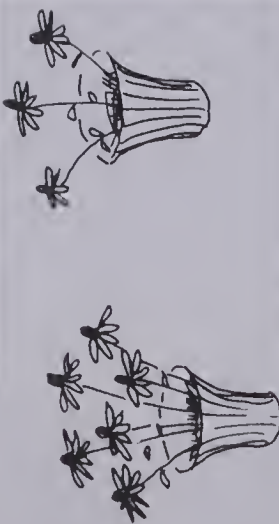
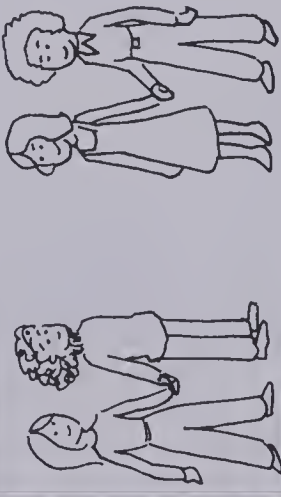
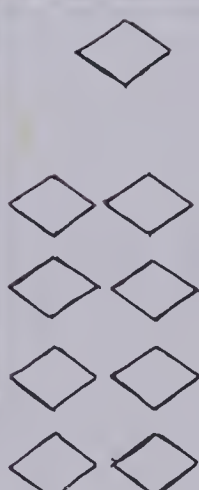
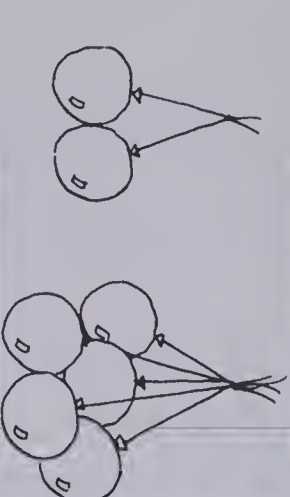
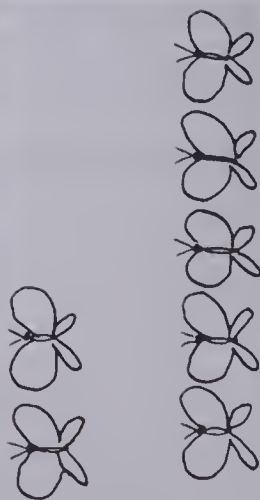
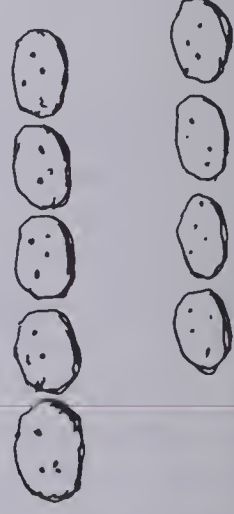


Wednesday

c. Girls and Boys Graph

Provide paper, pencils, and crayons. Instruct each child to do a picture of the girls in his or her family and a picture of the boys. Decide ahead of time whether to use children and adults, or just children. Display the pictures with appropriate labels.

Girls	Boys	Children In All
Mary's family  3	Mary's family  2	5
Bill's family 0	Bill's family  4	4

Addition Picture Cards

Name _____

Pretest

Unit 3

Add.



$$2 + 4 = \boxed{6}$$



$$1 + 5 = \boxed{6}$$



$$3 + 0 = \boxed{3}$$

Draw. Add.



$$5 + 2 = \boxed{7}$$



$$7 + 1 = \boxed{8}$$

Add.

$$6 \triangle \triangle \triangle \triangle \triangle$$

$$1 \triangle$$

$$2 \triangle \triangle$$

$$+ 2 \triangle \triangle$$

$$+ 8 \triangle \triangle \triangle \triangle \triangle \triangle \triangle \triangle$$

$$+ 7 \triangle \triangle \triangle \triangle \triangle \triangle \triangle$$

$$\boxed{8}$$

$$\boxed{9}$$

$$\boxed{9}$$

Draw. Add.

$$6 \triangle \triangle \triangle \triangle \triangle \triangle \triangle$$

$$3 \triangle \triangle \triangle \triangle$$

$$4 \triangle \triangle \triangle \triangle \triangle$$

$$+ 1 \triangle$$

$$+ 0$$

$$+ 1 \triangle$$

$$\boxed{7}$$

$$\boxed{3}$$

$$\boxed{5}$$

Add.



$$4\text{¢} + 2\text{¢} = \boxed{6}\text{¢}$$



$$7\text{¢} + 2\text{¢} = \boxed{9}\text{¢}$$



Circle names for 4.

$$\boxed{2 + 2}$$

$$\boxed{5 + 1}$$

$$\boxed{2 + 1}$$

$$\boxed{3 + 1}$$

$$\boxed{0 + 4}$$

$$\boxed{1 + 3}$$

$$\boxed{4 + 0}$$

$$\boxed{2 + 3}$$

15

Name _____

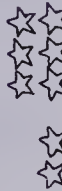
Post-test

Unit 3

Add.



$$7 + 1 = \boxed{8}$$



$$2 + 6 = \boxed{8}$$

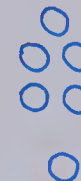


$$9 + 0 = \boxed{9}$$

Draw. Add.



$$3 + 2 = \boxed{5}$$



$$1 + 5 = \boxed{6}$$



$$4 + 2 = \boxed{6}$$

Add.

$$6 \heartsuit \heartsuit \heartsuit \heartsuit \heartsuit$$

$$+ 1 \heartsuit$$

$$2 \heartsuit \heartsuit$$

$$+ 5 \heartsuit \heartsuit \heartsuit \heartsuit$$

$$+ 1 \heartsuit$$

$$\boxed{7}$$

$$\boxed{7}$$

$$\boxed{9}$$

Draw. Add.

$$1 \heartsuit$$

$$+ 2 \heartsuit \heartsuit$$

$$0$$

$$+ 8 \heartsuit \heartsuit \heartsuit \heartsuit \heartsuit \heartsuit \heartsuit \heartsuit$$

$$2 \heartsuit \heartsuit$$

$$+ 2 \heartsuit \heartsuit$$

$$\boxed{3}$$

$$\boxed{8}$$

$$\boxed{4}$$

Add.



$$3\text{¢} + 1\text{¢} = \boxed{4}\text{¢}$$



$$6\text{¢} + 2\text{¢} = \boxed{8}\text{¢}$$



Circle names for 5.

$$\boxed{1 + 4}$$

$$\boxed{5 + 1}$$

$$\boxed{2 + 2}$$

$$\boxed{4 + 1}$$

$$\boxed{0 + 4}$$

$$\boxed{3 + 2}$$

$$\boxed{0 + 5}$$

$$\boxed{3 + 1}$$

$$\boxed{2 + 3}$$

21

Objective A1

Join two sets; recognize and use the symbol +.

Vocabulary

And, plus, and ■ more, add, join, put together, in all, altogether

Materials

Coloured cubes that join

Dried lima beans (spray painted on one side)

Placemats

P* and T Numeral Cards to 8

Sign Cards $+$

Introducing the Lesson

Use familiar vocabulary and real life situations to develop the concept of addition. "Three children are at the table. Two more come to join them. Now there are five children in all."

Introduce the symbol for addition, +, after these activities as you repeat a brief word and number sentence to describe the situation. "Six books and (or, plus) one more book gives us seven books in all. 6 plus 1 equals 7."

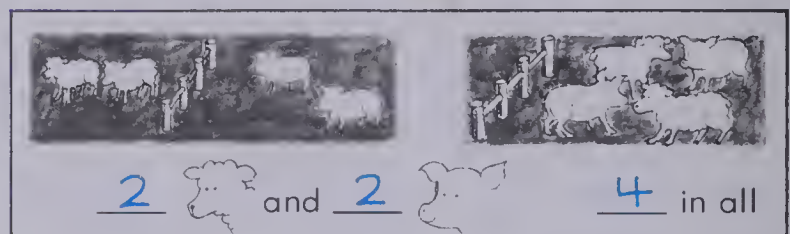
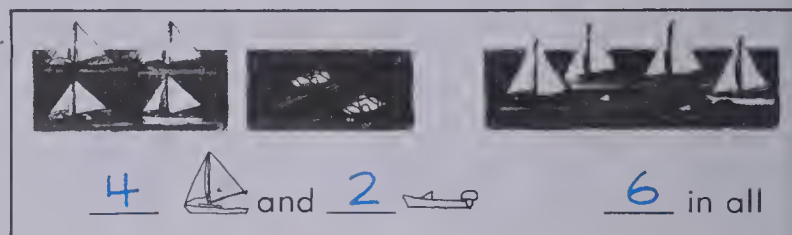
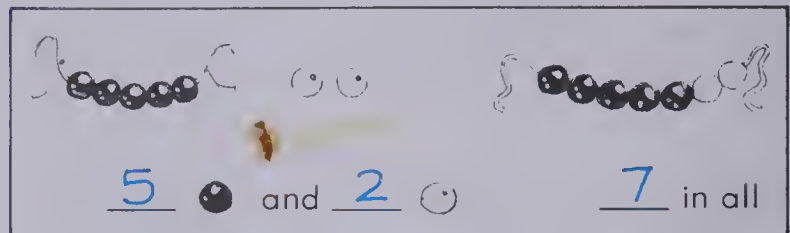
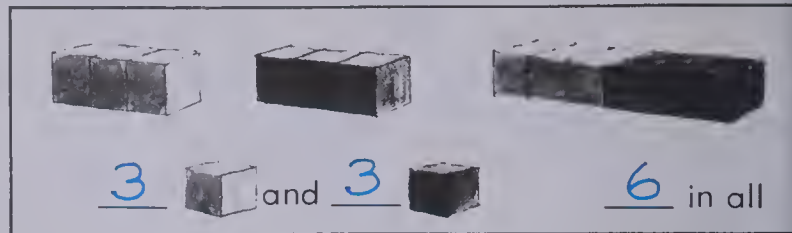
Teaching the Lesson

Using blocks that join, reinforce the vocabulary *add, plus, in all, equals, altogether*. "Take three red blocks. Add two blue blocks. How many blocks in all? Good. 3 plus 2 more equals 5 in all."

Give out placemats and lima beans. Give the oral directions, "Show me two red beans and three white beans. How many in all?"

Have each child take five beans, shake them, place them on their mats, and separate them into two sets by colour. Ask them to read their addition names for five. As they call, *four and one*, write the names for 5 on the chalk-board using the + sign.

Ask the children to trace the plus sign on their desks as you print it on the board. Emphasize the down and across strokes (like a little T).



Join two sets; problem solving

forty-one 41

Using the Pages

- On page 41, do each example orally with the children as they record how many in each subset and how many in all.
- On page 42, the children are to record the number of each subset. Orally emphasize the number in all; sums are not to be recorded yet.



$2 + 3$



$4 + 1$



$3 + 3$



$1 + 5$



$5 + 2$



$2 + 4$



$3 + 2$



$1 + 6$



$3 + 1$



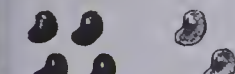
$2 + 5$



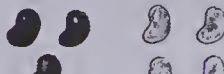
$1 + 6$



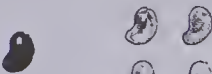
$4 + 3$



$4 + 2$



$3 + 4$



$1 + 4$



$5 + 1$



$2 + 6$



$4 + 4$

42 forty-two

Introduce +; problem solving

Reinforcement

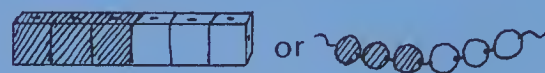
1. Give Numeral Cards, $+$ cards, and beans to the children to shake and record their own list of addition names for seven. They are to read them as *four plus three, seven in all*; or *four plus three equals seven*.

2. Provide a paper and pencil for each child. Draw a set of three round shapes and two square shapes. Ask, "How many circles? How many squares? How many shapes in all?" Ask the children to draw the set and then to record how many in each subset, using the $+$ sign.

$$\begin{array}{c} \bigcirc \bigcirc \bigcirc \square \square \\ 3 + 2 \end{array}$$

Repeat this procedure using a variety of shapes.

3. Provide cards like $3 + 3$. Ask the children to join blocks or string beads to show



4. Using Plasticene marbles of two colours and Addition Name Cards, have the children model addition names.

$$\begin{array}{c} \bigcirc \bigcirc \bigcirc \bigcirc \\ 3 + 1 \end{array}$$

These materials should be available at the classroom Addition Centre.

Enrichment

Provide each student with six beans of two colours, and a sheet of paper. Individually, they play "Shake, Separate, and Record" to see how many different names for six they can find.

6
2 + 4
1 + 5
6 + 0
.
.
.



Extra Practice



$3 + 2$



$3 + 3$



$4 + 2$



$4 + 1$



$2 + 5$



$3 + 1$



$3 + 4$



$1 + 6$



$6 + 2$

Worksheet A1

Pages 41-42

UNIT 3 LESSON 2

Objective A2

Recognize and use the symbol = in horizontal addition sentences.

Vocabulary

Equals, balance, in all, altogether, number sentence

Direction words: How many in all?

Materials

Unifix blocks in two colours


Counters: beans, Bingo chips*, plastic sticks*

T Numeral Cards to 9, T Placemat

Sign Cards $+$ and $=$

Balance (real or cardboard)

Introducing the Lesson

Review building and naming subsets of Unifix blocks.  "two plus three." Ask, "How many in all?" Five. Repeat as, "Two plus three equals five." Record to show equals sign.

$$2 + 3 = 5$$

Teaching the Lesson

Ask the children to come up to the chalkboard and draw a set like



Record "5." Draw two more. Record "5 + 2." Ask how many there are altogether. Show the children how to record the number in all using =.

$$5 + 2 = 7$$

Using the T placemat and Numeral Cards, show two subsets. Label these with the number in all above.



Show the students how the number in all can be used with the equals sign to complete a number sentence.

Using various types of counters to make sets, direct the students to come up and place the T Numeral and Sign cards to show the right number sentence.



$$2 + 2 = 4$$



$$3 + 2 = 5$$



$$1 + 1 = 2$$



$$3 + 1 = 4$$



$$2 + 3 = 5$$



$$3 + 4 = 7$$

How many in all?



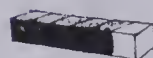
$$2 + 3 = 5$$



$$1 + 2 = 3$$



$$4 + 2 = 6$$



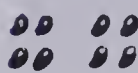
$$5 + 1 = 6$$



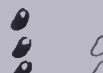
$$3 + 4 = 7$$



$$2 + 2 = 4$$



$$4 + 4 = 8$$



$$3 + 2 = 5$$



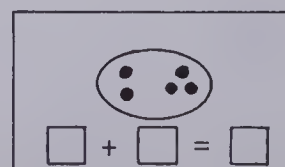
$$1 + 6 = 7$$

Introduce = ; problem solving

forty-three 43

Using the Pages

- On page 43 (top) students record the addends, and trace over the sum. Do at least two examples with the children, emphasizing how we read the number sentence: "Two red blocks and two blue blocks equals four blocks in all." On Page 43 (bottom) the addends are provided and the sum must be recorded.
- At this point, the students will have had considerable oral experience describing subsets and the number in all. Page 44 develops the student's ability to translate pictures into symbols. This is an extension of the work done on placemats in earlier lessons and is an important step in leading students from concrete examples to abstract number sentences.



How many?



$$3 + 3 = \boxed{6}$$



$$5 + 2 = \boxed{7}$$



$$6 + 1 = \boxed{7}$$



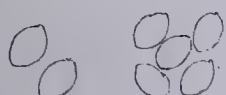
$$1 + 4 = \boxed{5}$$



$$2 + 3 = \boxed{5}$$



$$4 + 2 = \boxed{6}$$



$$2 + \boxed{5} = \boxed{7}$$



$$4 + \boxed{4} = \boxed{8}$$



$$3 + \boxed{6} = \boxed{9}$$



$$5 + \boxed{3} = \boxed{8}$$



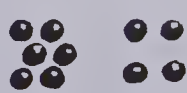
$$\boxed{3} + \boxed{4} = \boxed{7}$$



$$\boxed{4} + \boxed{1} = \boxed{5}$$



$$\boxed{2} + \boxed{7} = \boxed{9}$$



$$\boxed{6} + \boxed{4} = \boxed{10}$$

44 forty-four

Addition sentences; problem solving

Reinforcement

1. Introduce the idea of the equals sign acting like a balance in a number sentence. Show the children how both sides of the equals sign must balance or be the same in number. If possible, use a real balance to generate number sentences. One child places two counters on one side. Another child adds three more to the same side. Then a third child balances by putting five counters on the other side and records the sentence.



If a balance isn't available, draw one on chart paper or make one using cardboard, with pockets to hold counters.

2. With Picture Set Cards for 3, 4, 5, and 6 and paper record the number in all using the equals sign.

***	= 3
0000	= 4
*****	= 5
□□□□□□	= 6

3. Have the students model addition number sentences with the materials available at the classroom Addition Centre. (See the introduction to this unit.)

$$4 + 3 = \square \quad \text{○○○○○○○○} \quad 4 + 3 = 7$$

Enrichment

Provide a worksheet of examples like 0000 = 00 for the students to balance by drawing to make the same number on each side of the equals sign.

$$\text{○○○○} = \text{○○○○}$$

Extra Practice

How many?

Worksheet A2

Pages 43-44



$$4 + 2 = \boxed{6}$$



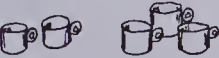
$$1 + 5 = \boxed{6}$$



$$2 + 6 = \boxed{8}$$



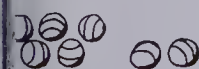
$$3 + \boxed{4} = \boxed{7}$$



$$2 + \boxed{3} = \boxed{5}$$



$$7 + \boxed{1} = \boxed{8}$$



$$\boxed{5} + \boxed{2} = \boxed{7}$$



$$\boxed{7} + \boxed{2} = \boxed{9}$$



$$\boxed{3} + \boxed{3} = \boxed{6}$$

Objective A3

Use models to add and write horizontal addition sentences.

Vocabulary

Plus, equals, number sentences

Direction word: Add.

Materials

Bingo chips*

Hands placemats

T and P* Numeral Cards to 6

T and P Sign Cards $+$ and $=$

Felt board and felt shapes

Introducing the Lesson

Using small counters (bingo chips), play the hand game where children hold a given number of chips, shake, separate, and describe the sets, e.g.,



Three plus four equals seven in all. Have each child describe how many in each hand and how many in all.

Teaching the Lesson

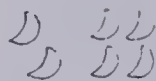
Using hands placemats and P Numeral and Sign Cards, ask the children to shake the bingo chips, separate them and place them on the hands. Then direct the children to label their sets with the Numeral and Sign Cards or write the number sentence on the chalkboard.

Flash the T Numeral and Sign Cards for a quick review of the symbols for plus and equals. Have the children call out what is on each card as it is flashed.

Using the felt board and shapes, direct the students to take turns building sets while others tell the corresponding addition sentence. The students may also respond with the Numeral and Sign Cards to show the number sentence.

Discuss real-life situations involving sums greater than ten where the children can count to solve, like "There are _____ boys and _____ girls in class. How many children in all? Let's count."

Add.



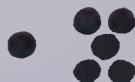
$$2 + 4 = 6$$



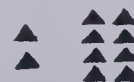
$$3 + 5 = 8$$



$$6 + 1 = 7$$



$$1 + 5 = 6$$



$$2 + 8 = 10$$



$$3 + 2 = 5$$



$$2 + 6 = 8$$



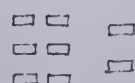
$$5 + 3 = 8$$



$$1 + 7 = 8$$



$$4 + 3 = 7$$



$$6 + 2 = 8$$



$$2 + 1 = 3$$



$$1 + 8 = 9$$



$$2 + 2 = 4$$



$$3 + 1 = 4$$



$$2 + 3 = 5$$

Add in horizontal form

forty-five 45

Using the Pages

- Page 45 provides addition sentences with pictured objects for counting. Point out the direction at the top of the page, "Add." The last two rows involve counting and recording addends and sums.
- Page 46 is a follow-up to the work with the hands placemats. Do an example from the top and bottom sections with the students.

Add.



$$3 + 3 = 6$$



$$4 + 1 = 5$$



$$5 + 2 = 7$$



$$1 + 6 = 7$$



$$3 + 5 = 8$$



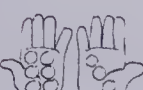
$$1 + 2 = 3$$



$$2 + 7 = 9$$



$$4 + 5 = 9$$



$$6 + 3 = 9$$



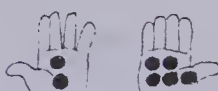
$$2 + 2 = 4$$



$$4 + 3 = 7$$



$$5 + 4 = 9$$



$$2 + 5 = 7$$



$$6 + 1 = 7$$



$$1 + 5 = 6$$

46 forty-six

Add in horizontal form

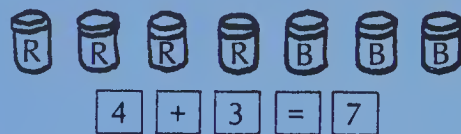
Reinforcement

1. For students having difficulty recording the entire sentence, practise recording addition names and joining them to the sum, first using an arrow, and later an equals sign.



1 + 3 → 6 in all
4 in all
2 in all

2. Give the students their Numeral and Sign Cards (or paper and pencils). Show two sets of objects (four jars of red paint, three of blue). Have the children place their cards on their desks to show a number sentence that describes the situation (or record it on paper).



Enrichment

For fun, try expanding addition number sentences to include more than two addends. Use coloured cubes that join. Students make a pattern or train of blocks, then describe it on paper.



$$3 + 2 + 3 + 2 + 3 + 2 = 15 \text{ in all}$$

Extra Practice

Add.



$$4 + 1 = 5$$



$$3 + 2 = 5$$



$$4 + 4 = 8$$



$$5 + 3 = 8$$



$$4 + 2 = 6$$



$$3 + 1 = 4$$



$$5 + 4 = 9$$



$$3 + 4 = 7$$



$$3 + 6 = 9$$

Worksheet A3

Pages 45-46

UNIT 3 LESSON 4

Objective A4

Draw models for addition sentences to find the sum.

Vocabulary

Plus, in all, altogether, number sentences

Materials


Counters (blocks, beans, bingo chips*, pennies*)

Jacket with pockets

Objects and price tags 1¢ to 6¢

Crayons

Introducing the Lesson

Using counters, have the children build and tell about a model of an addition situation, for example,  Two red plus four white, six blocks in all.

Three plus three equals six. Take turns having one student build as the others describe the model.

Teaching the Lesson

Using a jacket and pennies, ask the students to take turns putting zero to five pennies in each pocket. Ask others to come up, search the pockets, tell what they have found, and how much there is in all. *I found two cents and five cents. They count it up. I found seven cents in all.* Record $2¢ + 5¢ = 7¢$ and point out the cents sign. Display several objects with price tags. Have a pupil select two objects to buy. Other pupils show with a chalkboard drawing how many pennies are needed to pay for the objects. Record the appropriate number sentence.

Show



Draw



Record $3¢ + 4¢ = 7¢$

Record $2 + 3$ on the chalkboard. Ask a student to come up and draw a set of two and a set of three above the numerals. Write $=$ and ask another child to complete the number sentence. Provide other examples for the students to draw their own models of addition sentences.

Add.



$$2 + 3 = \boxed{5}$$



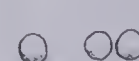
$$5 + 1 = \boxed{6}$$



$$1 + 3 = \boxed{4}$$



$$4 + 5 = \boxed{9}$$



$$1 + 2 = \boxed{3}$$



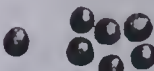
$$3 + 5 = \boxed{8}$$



$$5 + 2 = \boxed{7}$$



$$4 + 3 = \boxed{7}$$



$$1 + 6 = \boxed{7}$$

Draw. Add.



$$3 + 2 = \boxed{5}$$



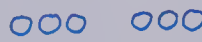
$$2 + 1 = \boxed{3}$$



$$1 + 4 = \boxed{5}$$



$$2 + 4 = \boxed{6}$$



$$3 + 3 = \boxed{6}$$



$$5 + 3 = \boxed{8}$$



$$4 + 1 = \boxed{5}$$



$$2 + 6 = \boxed{8}$$



$$6 + 1 = \boxed{7}$$

Draw models for addition

forty-seven 47

Using the Pages

- Page 47 (top) is a review of addition sentences with counting models to solve. The bottom half has the students model the sentences on their own, using round shapes (similar to the exercises from the lesson).
- Page 48 requires the student to colour blocks to show each subset. Less able students may need help completing this exercise.

Add.



$$3 + 4 = 7$$



$$2 + 5 = 7$$



$$4 + 2 = 6$$



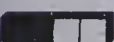
$$1 + 5 = 6$$



$$3 + 1 = 4$$



$$6 + 2 = 8$$



$$2 + 2 = 4$$



$$5 + 4 = 9$$



$$1 + 3 = 4$$

Colour. Add.



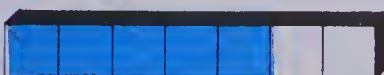
$$2 + 4 = 6$$



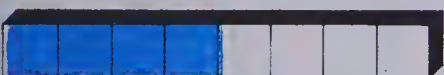
$$5 + 1 = 6$$



$$3 + 2 = 5$$



$$5 + 2 = 7$$



$$4 + 4 = 8$$



$$5 + 3 = 8$$

48 forty-eight

Colour models for addition

Reinforcement

1. Provide each student with a paper, pencil, and crayons. Have them fold the paper in eighths. Give directions such as: "Draw six circles. Colour two circles red. Colour the rest green. How many are green? What does your picture show?" *Two red and four green, six in all.* Make a number sentence to describe it." $2 + 4 = 6$

2. For students who have difficulty drawing a model of an addition sentence, provide counters and a number sentence board for them to work each example. Later, have them copy their counter arrangements as a transition to drawing each model.

$$\begin{array}{|c|} \hline \circ \\ \hline \end{array} + \begin{array}{|c|} \hline \circ \circ \\ \hline \end{array} = \begin{array}{|c|} \hline 5 \\ \hline \end{array}$$

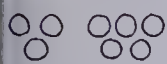


Enrichment

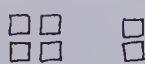
Prepare a worksheet with three colours. Label the columns: brown eyes, blue eyes, other colours. Have students independently check and record names of students under the appropriate heading. This also can be done as a whole class activity.

Extra Practice

Add.



$$3 + 5 = 8$$



$$4 + 2 = 6$$



$$6 + 1 = 7$$

Draw. Add.



$$3 + 1 = 4$$



$$2 + 6 = 8$$



$$5 + 1 = 6$$



$$4 + 4 = 8$$



$$6 + 3 = 9$$



$$2 + 5 = 7$$

Worksheet A4

Pages 47-48

UNIT 3 LESSON 5

Objective A5

Add, using vertical form.

Vocabulary

Across, up and down

Materials

Unifix cubes in two colours
P placemats, beans
Individual chalkboards, toy cars

Introducing the Lesson

Introduce a new way to read and write addition sentences by using Unifix two-coloured trains. Show them both horizontally and vertically.

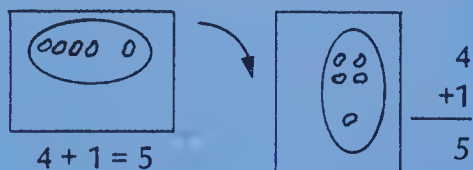


Record the number names on the chalkboard as children read them. Ask, "How many in all?" Six. Show the familiar way (across) of recording: $2 + 4 = 6$, and the new way (up and down), where we use a line instead of an equals sign.

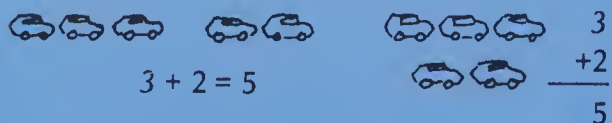
$$\begin{array}{r} 2 \\ +4 \\ \hline 6 \end{array}$$

Teaching the Lesson

Give out placemats, beans, and individual chalkboards. Have the students build and record. Then ask them to turn their mats up and down and record the vertical number sentence.



Use the toy cars to show two ways to model addition sentences.



Repeat the modelling of vertical addition sentences on the chalkboard.

Write $\begin{array}{r} 4 \\ +2 \\ \hline \end{array}$

Have a student draw a model $\begin{array}{r} 4 \text{ } \circ \circ \circ \circ \\ +2 \text{ } \circ \circ \\ \hline \end{array}$

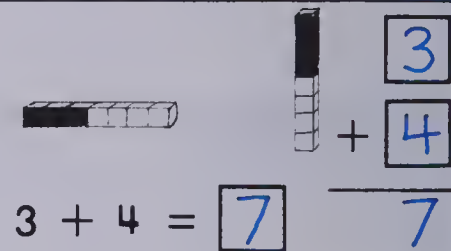
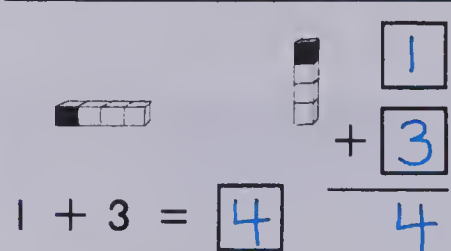
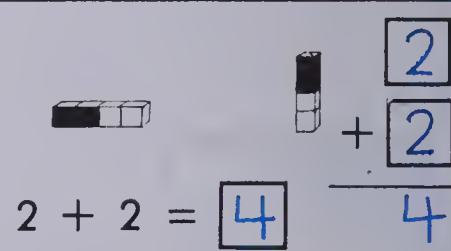
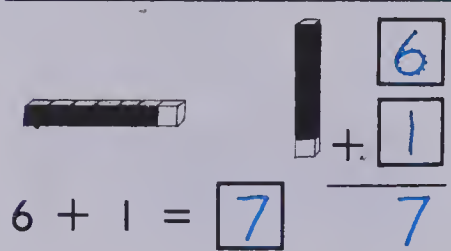
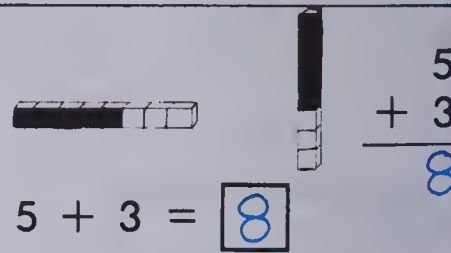
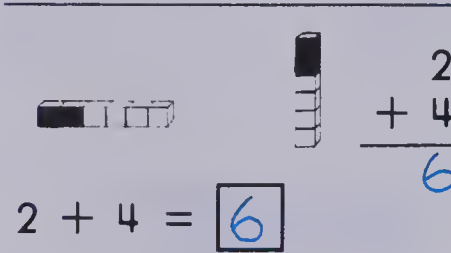
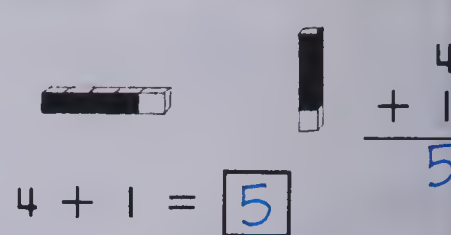
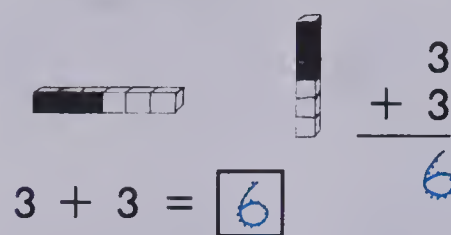
.... and then record the sum.



$$2 + 5 = 7$$



$$\begin{array}{r} 2 \\ + 5 \\ \hline 7 \end{array}$$



Add in vertical form

forty-nine 49

Using the Pages

- Page 49 is similar to the first half of the lesson and requires the student to interpret models for vertical number sentences, and find their sums.
- Page 50 has the student add on to sets as a help in solving each number sentence.

Add.

$$\begin{array}{r} 3 \text{ ●●●} \\ + 2 \text{ ●●} \\ \hline 5 \end{array}$$

$$\begin{array}{r} 2 \text{ ●●} \\ + 1 \text{ ●} \\ \hline 3 \end{array}$$

$$\begin{array}{r} 4 \text{ ○○○○} \\ + 4 \text{ ○○○○} \\ \hline 8 \end{array}$$

$$\begin{array}{r} 1 \text{ ●} \\ + 4 \text{ ○○○○} \\ \hline 5 \end{array}$$

$$\begin{array}{r} 3 \text{ ●●●} \\ + 5 \text{ ●●●●●} \\ \hline 8 \end{array}$$

$$\begin{array}{r} 2 \text{ ●●} \\ + 6 \text{ ○○○○○○} \\ \hline 8 \end{array}$$

$$\begin{array}{r} 4 \text{ ○○○○} \\ + 3 \text{ ●●●} \\ \hline 7 \end{array}$$

$$\begin{array}{r} 2 \text{ ●●} \\ + 3 \text{ ●●●} \\ \hline 5 \end{array}$$

$$\begin{array}{r} 5 \text{ ●●●●●} \\ + 1 \text{ ●} \\ \hline 6 \end{array}$$

Draw. Add.

$$\begin{array}{r} 1 \text{ ○} \\ + 2 \text{ ●●} \\ \hline 3 \end{array}$$

$$\begin{array}{r} 4 \text{ ○○○○} \\ + 2 \text{ ●●} \\ \hline 6 \end{array}$$

$$\begin{array}{r} 2 \text{ ●●} \\ + 2 \text{ ●●} \\ \hline 4 \end{array}$$

$$\begin{array}{r} 2 \text{ ○○} \\ + 5 \text{ ○○○○○○} \\ \hline 7 \end{array}$$

$$\begin{array}{r} 3 \text{ ○○○○} \\ + 1 \text{ ○} \\ \hline 4 \end{array}$$

$$\begin{array}{r} 5 \text{ ○○○○○○} \\ + 3 \text{ ○○○○} \\ \hline 8 \end{array}$$

$$\begin{array}{r} 6 \text{ ○○○○○○} \\ + 2 \text{ ○○} \\ \hline 8 \end{array}$$

$$\begin{array}{r} 1 \text{ ○} \\ + 5 \text{ ○○○○○○} \\ \hline 6 \end{array}$$

$$\begin{array}{r} 3 \text{ ○○○○} \\ + 4 \text{ ○○○○} \\ \hline 7 \end{array}$$

Reinforcement

1. Have groups of students take turns working at the chalkboard, recording a number sentence to match a given model (horizontal and/or vertical) or drawing a model to match a number sentence.

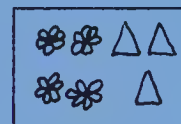
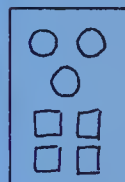
2. Provide card sets of pairs of number sentences for the students to match horizontal and vertical equivalents.

$$2 + 4 = 6$$

$$\begin{array}{r} 2 \\ + 4 \\ \hline 6 \end{array}$$

Enrichment

1. Provide cards (approx. 10 cm × 20 cm) and stickers or stamps for children to make model sets for horizontal and vertical addition sentences.



Have two sets on each card. Colour, shape, or grouping can be used to distinguish the two subsets. These later can be used to record number sentences from a model.

2. Make and display a Girls and Boys Graph as suggested in the introduction to this unit.

Have the children make the drawings and help total the family members.

Girls	Boys	Children In All
Mary's family A A A 3	Mary's family A A 2	5
Bill's family 0	Bill's family A A A A 4	4

Extra Practice

Worksheet A5

Pages 49-50

Add.

$$\begin{array}{r} 5 \text{ △△△△△} \\ + 1 \text{ △} \\ \hline 6 \end{array}$$

Draw. Add.

$$\begin{array}{r} 3 \text{ ○○○○} \\ + 2 \text{ ○○} \\ \hline 5 \end{array}$$

$$\begin{array}{r} 5 \text{ ○○○○○○} \\ + 3 \text{ ○○○○} \\ \hline 8 \end{array}$$

$$\begin{array}{r} 2 \text{ ♥♥} \\ + 2 \text{ ♥♥} \\ \hline 4 \end{array}$$

$$\begin{array}{r} 1 \text{ ○} \\ + 4 \text{ ○○○○} \\ \hline 5 \end{array}$$

$$\begin{array}{r} 3 \text{ ○○○○} \\ + 3 \text{ ○○○○} \\ \hline 6 \end{array}$$

$$\begin{array}{r} 3 \text{ □□□} \\ + 4 \text{ □□□□} \\ \hline 7 \end{array}$$

$$\begin{array}{r} 6 \text{ ○○○○○○} \\ + 2 \text{ ○○} \\ \hline 8 \end{array}$$

$$\begin{array}{r} 2 \text{ ○○} \\ + 5 \text{ ○○○○○○} \\ \hline 7 \end{array}$$

UNIT 3 LESSON 6

Objective A6

Add 1 in sums to 10.

Vocabulary

One more, one greater, plus one

Materials

Blocks or bingo chips*

Pennies*, bag

Paper plates

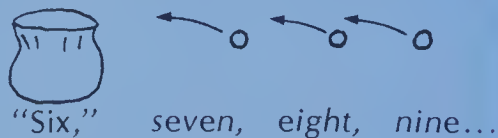
Piggy bank

Introducing the Lesson

Using sets of blocks or bingo chips, have the students count how many. As you add one more, the children describe it. *Six, plus one more equals seven.*

Say a number (to 10), and then the children say the number one greater.

Using pennies and a bag into which you can drop them, have the students practise counting on from a hidden set.



Teaching the Lesson

Give each student a paper plate and counters. Review making up a set and adding one more; record the number sentence on the chalkboard. Put a number sentence on the chalkboard like $8 + 1 = \underline{\quad}$ and have the children build a model to solve it. (Some students may not need a model for plus one examples, but have them try a few anyway.)

Encourage the children to see that $8 + 1$ or $1 + 8$ gives nine in all. Model it so that the greater subset is on the plate and the one is added to it.

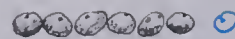
Try both vertical and horizontal number sentences on the board as students model them.

Hold in your open palm a set less than ten, add one more and ask, "How many in all?". Repeat with your hand covering a set. Uncover it to count and check.

Draw one more. Add.



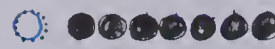
$$3 + 1 = \boxed{4}$$



$$6 + 1 = \boxed{7}$$



$$2 + 1 = \boxed{3}$$



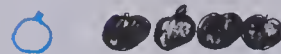
$$1 + 7 = \boxed{8}$$



$$1 + 3 = \boxed{4}$$



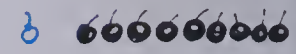
$$1 + 6 = \boxed{7}$$



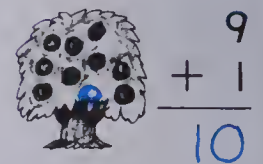
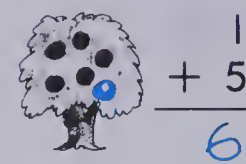
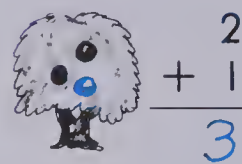
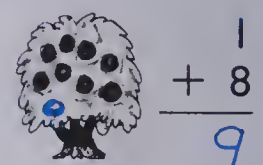
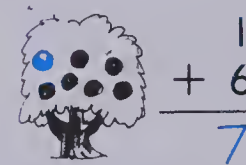
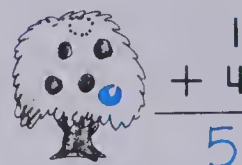
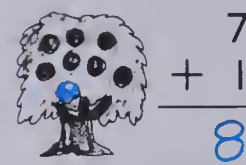
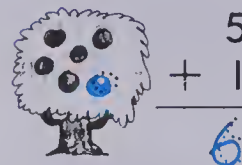
$$1 + 4 = \boxed{5}$$



$$5 + 1 = \boxed{6}$$



$$1 + 9 = \boxed{10}$$



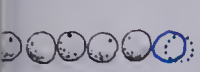





Add with 1

fifty-one 51







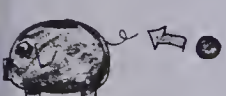


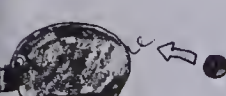
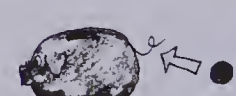
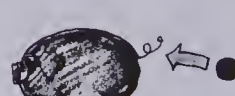
Using the Pages

- Page 51 requires that the student draw one more on to an existing set, and record the sum. Do several chalkboard examples as an introduction.
- Page 52 introduces counting on from a hidden set (half-way down the page). Less able children may not be ready for this half of the page.

Draw one more. Add.

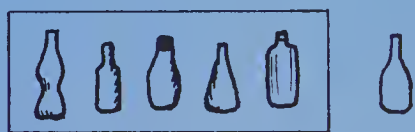

$$5 + 1 = 6$$

$$3 + 1 = 4$$

$$8 + 1 = 9$$

$$1 + 6 = 7$$

$$1 + 4 = 5$$

$$1 + 7 = 8$$

Add one more.


$$2 + 1 = 3$$

$$9 + 1 = 10$$

$$1 + 1 = 2$$

$$6 + 1 = 7$$

$$4 + 1 = 5$$

$$5 + 1 = 6$$

$$8 + 1 = 9$$

$$9 + 1 = 10$$

$$3 + 1 = 4$$

$$7 + 1 = 8$$

$$2 + 1 = 3$$

$$6 + 1 = 7$$

Reinforcement

- 1. Further develop their ability to count on to a hidden quantity by using a piggy bank and pennies. For example, put in five, add one more and ask, "How many in all?" Pretend to have great savings in the bank. Add on to them. "I have thirty-six pennies! Add one more. How many now?" Use numbers within the range of ability of your class.
- 2. Using sets of objects, have the less able students count them and cover them with a Numeral Card. Then they tell you how many there will be if one more is added. **5** One more will give me six.
- 3. Using magazines, paper, paste, scissors, and crayons, have the students find a group of objects to cut out and paste on their papers. They then draw one more and write a number sentence to show what they've done.


$$5 + 1 = 6$$










Enrichment

Using familiar sight vocabulary (such as girl, boy, hat, car, book, dog, egg) have students add an "s" to form the plural (use only regular plurals). Then ask them to record an addition sentence by counting letters.

dog^s 3 + 1 = 4
plant^s 5 + 1 = 6
.....

Extra Practice

Draw one more. Add.


$$4 + 1 = 5$$

$$5 + 1 = 6$$

$$6 + 1 = 7$$

$$\begin{array}{r} 7 \\ + 1 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 4 \\ + 2 \\ \hline 6 \end{array}$$

$$\begin{array}{r} 2 \\ + 1 \\ \hline 3 \end{array}$$

$$\begin{array}{r} 9 \\ + 1 \\ \hline 10 \end{array}$$

$$\begin{array}{r} 8 \\ + 1 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 3 \\ + 1 \\ \hline 4 \end{array}$$

UNIT 3 LESSON 7

Objective A7

Add 2 in sums to 10.

Vocabulary

Pair, counting on

Direction words: How many buttons?

Materials

Number line (to 20)

Beans

Paper plates

Introducing the Lesson

Discuss things that come in twos (ears, hands, shoes...), using the word "pair" frequently.

Seat all of the children in a circle with their hands behind their backs. To count all hands, have each student bring out one hand, then the other, as he or she counts, *One* (softly), *TWO* (loudly). *Three* (softly), *FOUR* (loudly).

Count orally, using the number line and the same soft-loud method. Now have them try counting by thinking one number and saying the next. This is the start of a counting by twos pattern.

Teaching the Lesson

Give out beans and a paper plate to each student. Tell them how many to put on the plate. Then have them add two and find how many in all. Encourage counting on. "Make six. Count them". *One, two, three, four, five, six.* "Now pick up two. Get ready. Here is six. Add two." *Seven, eight.* "How many in all?" *Eight.* "Good—6 plus 2 equals 8." Take two plates and ask the pupils to make a set of one and a set of nine. Ask, "Which is easier, 9 plus 1 more or 1 plus 9 more?" Count out to see which is easier. Repeat this activity using sets of two and eight.

Using beans and plates, repeat building sets and adding two. This time, however, use the plate to cover the starting set.

"Put six under the plate."

"Add two." *Seven, Eight.*

"How many in all? Count to check."

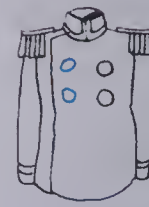
Lift the plate.

How many buttons ?



0 2 4 6 8 10

Add 2.



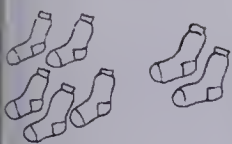
Add 2

fifty-three 53

Using the Pages

- For the bottom of page 53, use a chalkboard example to show the class how to draw two more and then find how many in all.
- Review counting models for page 54. Less able children may have difficulty with the last row of examples where each object cannot be counted and counting on is necessary.

Add.



$$5 + 2 = 7$$



$$4 + 2 = 6$$



$$1 + 2 = 3$$



$$7 + 2 = 9$$



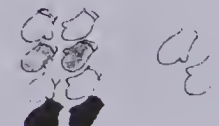
$$3 + 2 = 5$$



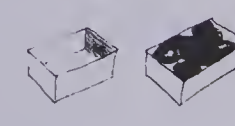
$$6 + 2 = 8$$



$$2 + 2 = 4$$



$$8 + 2 = 10$$



$$0 + 2 = 2$$



$$2 + 6 = 8$$



$$2 + 4 = 6$$



$$2 + 7 = 9$$



$$8 + 2 = 10$$



$$5 + 2 = 7$$



$$6 + 2 = 8$$

54 fifty-four

Add with 2

Reinforcement

1. Provide each student with paper, pencil, and crayons. Ask the students to draw a plate with six oranges on it and then to add two lemons to it. "Now how many pieces of fruit are on the plate?" *Eight*. "Write a number sentence to describe the picture."

$$6 + 2 = 8$$

Try drawing also:

- 5 red apples + 2 green apples
- 8 green grapes + 2 purple grapes
- 4 yellow bananas + 2 blue plums

2. Using coloured blocks, have the students build trains



and read their coloured patterns. Ask them to make patterns involving every second block. Have them count the blocks, saying aloud only one colour.



one, TWO, three, FOUR, five, SIX...

Enrichment

Pass out paper, crayons, and scissors. Ask the children to draw, colour, and cut out a picture of their shoes. Paste the pairs of shoes onto chart paper to make a chart for oral counting practice in counting by twos.



How many shoes?

Count by twos.



Extra Practice

Add 2.

$$\begin{array}{r} \text{3 birds} \\ + 2 \\ \hline 5 \end{array}$$

$$\begin{array}{r} \text{5 birds} \\ + 2 \\ \hline 7 \end{array}$$

$$\begin{array}{r} \text{8 birds} \\ + 2 \\ \hline 10 \end{array}$$

$$\begin{array}{r} \text{2 flowers} \\ + 2 \\ \hline 4 \end{array}$$

$$\begin{array}{r} \text{7 flowers} \\ + 2 \\ \hline 9 \end{array}$$

$$\begin{array}{r} \text{4 flowers} \\ + 2 \\ \hline 6 \end{array}$$

$$\begin{array}{r} \text{1 person} \\ + 2 \\ \hline 3 \end{array}$$

$$\begin{array}{r} \text{6 people} \\ + 2 \\ \hline 8 \end{array}$$

$$\begin{array}{r} \text{0 people} \\ + 2 \\ \hline 2 \end{array}$$

Worksheet A7

Pages 53-54

UNIT 3 LESSON 8

Objective A8

Add 0, 1, and 2 in sums to 10.

Vocabulary

Zero, none, empty

Direction words: Circle names for...

Materials

Counters: beans, Bingo chips*, plastic sticks*

Placemats

Addition Name Cards (plus 0, 1, and 2 to 10) $6 + 0$

Introducing the Lesson

Demonstrate adding zero to an existing set by “pretending” (moving your hand toward a set of beans but not actually adding anything). Have the students come up and add zero and then tell how many there are in all.



Four beans plus zero beans is four beans in all.

Reverse the subsets. Start with an empty set (plate, box, mat, etc.), add objects, and have the children describe what they see.

Teaching the Lesson

Give out placemats and counters. Tell the students what to model. “Three, plus zero, equals _____.” Separate the subsets with a line on the placemat so that the zero subset is clear.

Repeat the above, but you use Addition Name Cards. Show $6 + 0$ and have the students model the card and say, “six plus zero equals six in all.” Review add 1 and add 2 with the Addition Name Cards. Ask the students to model and tell how many in all.

Using hands and, for example, five objects, have the students shake the items and separate. Then ask them to tell what is in their hands. Record the addition names while the students call them out.

Read the list aloud with the students, write an equals sign after each as it is read, and record how many in all.

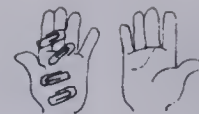
Add.



$$3 + 0 = 3$$



$$7 + 0 = 7$$



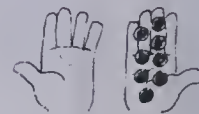
$$4 + 0 = 4$$



$$0 + 5 = 5$$



$$0 + 2 = 2$$



$$0 + 8 = 8$$



$$6 + 0 = 6$$



$$0 + 9 = 9$$



$$1 + 0 = 1$$

Draw. Add.



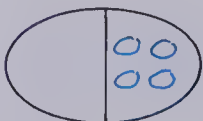
$$5 + 0 = 5$$



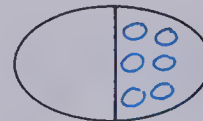
$$0 + 7 = 7$$



$$2 + 0 = 2$$



$$0 + 4 = 4$$



$$0 + 6 = 6$$



$$10 + 0 = 10$$

Add with 0

fifty-five 55

Using the Pages

- Page 55 reviews the lesson's adding with zero activities, using horizontal addition sentences.
- The top of page 56 reviews +1, +2, and +0 in vertical form. At the bottom of page 56, the students must recognize addition names for 4 and 5. Point out the new direction, “Circle names for ...”

Draw. Add.

$$\begin{array}{r} 3 \text{ } \bigcirc \bigcirc \bigcirc \bigcirc \\ + 2 \text{ } \bigcirc \bigcirc \\ \hline 5 \end{array}$$

$$\begin{array}{r} 3 \text{ } \bigcirc \bigcirc \bigcirc \\ + 1 \text{ } \bigcirc \\ \hline 4 \end{array}$$

$$\begin{array}{r} 4 \text{ } \bigcirc \bigcirc \bigcirc \bigcirc \\ + 0 \\ \hline 4 \end{array}$$

$$\begin{array}{r} 2 \text{ } \bigcirc \bigcirc \\ + 1 \text{ } \bigcirc \\ \hline 3 \end{array}$$

$$\begin{array}{r} 2 \text{ } \bigcirc \bigcirc \\ + 2 \text{ } \bigcirc \bigcirc \\ \hline 4 \end{array}$$

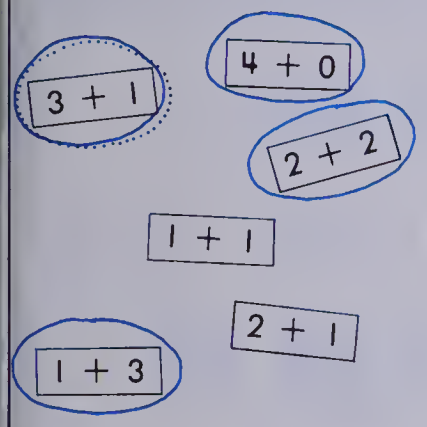
$$\begin{array}{r} 4 \text{ } \bigcirc \bigcirc \bigcirc \bigcirc \\ + 1 \text{ } \bigcirc \\ \hline 5 \end{array}$$

$$\begin{array}{r} 1 \text{ } \bigcirc \\ + 0 \\ \hline 1 \end{array}$$

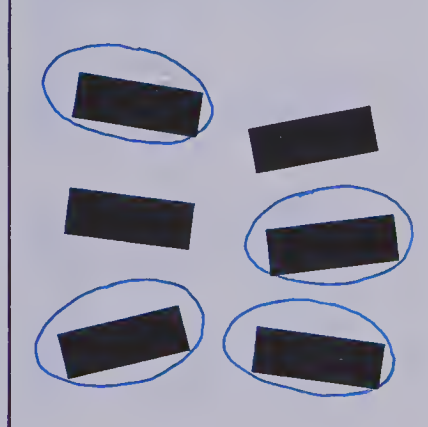
$$\begin{array}{r} 1 \text{ } \bigcirc \\ + 4 \text{ } \bigcirc \bigcirc \bigcirc \bigcirc \\ \hline 5 \end{array}$$

$$\begin{array}{r} 2 \text{ } \bigcirc \bigcirc \\ + 0 \\ \hline 2 \end{array}$$

Circle names for 4.



Circle names for 5.



56 fifty-six

Add with 0, 1, or 2; sums to 5

Reinforcement

1. Have one regular die and one marked 0, 1, 2, 0, 1, 2. Give each pupil a turn rolling both dice and calling out an addition name with the numbers thrown. The other students write and/or model the number sentence, then record the sum. Check the sums orally after each example and have the students mark their own work.

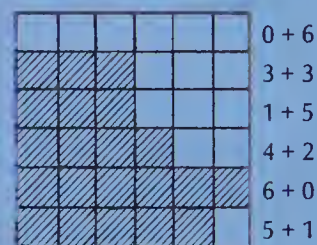
2. Have the students colour or build models to match the Addition Name Cards.



Enrichment

Using graph paper with large squares, have the children make two colour trains of a given length. Then they write the names or number sentences to match each colour train. Use blocks to demonstrate this, also. You can reverse this by having the students copy block patterns onto the graph paper.

6 in all



Extra Practice

Add.

$$4 + 0 = 4$$

$$0 + 7 = 7$$

$$0 + 5 = 5$$

Draw. Add.

$$3 + 0 = 3$$

$$0 + 1 = 1$$

$$3 + 0 = 3$$

$$0 + 6 = 6$$

$$2 + 0 = 2$$

$$0 + 9 = 9$$

Worksheet A8

Pages 55-56

UNIT 3 LESSON 9

Objective M1

Recognize and use the symbol ¢; add pennies.

Vocabulary

Pennies, coins, money, buy, pay, cost, price

Direction words: How much?

Materials

Pennies*

Objects to buy

Price tag cards to 9¢

Crayons

Introducing the Lesson

Display the price tag cards and direct the students to read each price and show that many pennies.

As you change cards, have the students alter their sets to match the cards, without reading aloud. After several examples, ask them what they did to make the new amount.

○○○○

4¢

○○

2¢

I took away
two cents.

○○○○○○

6¢

I added
four cents.

Teaching the Lesson

Showing two price tags, have the children arrange pennies for both and then find how many pennies in all.

Display some objects and assign each a price tag card. Ask a few students to come up and point to two objects they want to buy. Have the other children use their pennies to show how much is needed to buy each object. On the chalkboard, draw the objects and write the cost of each. Direct the children to come up and draw the pennies needed. Count to determine how many cents will be needed in all. Then record the total cost.

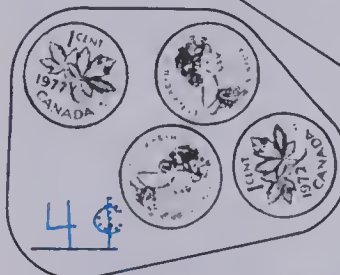
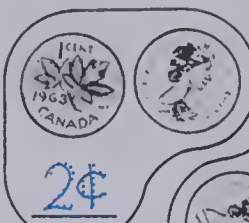


○○○○ ○○

$$4¢ + 2¢ = 6¢$$

Remind the students to write the cents sign with their answer. Have them practise making 'c' with a line through it: ¢.

How much?



Colour.

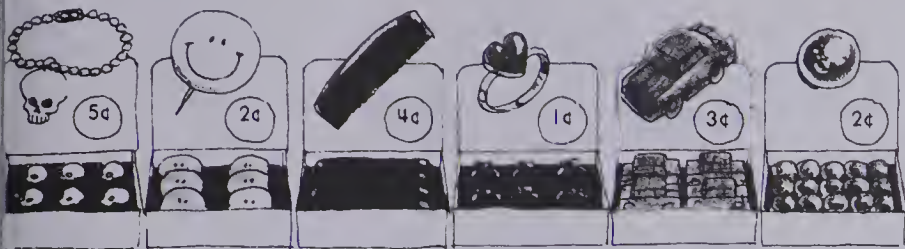


Introduce ¢

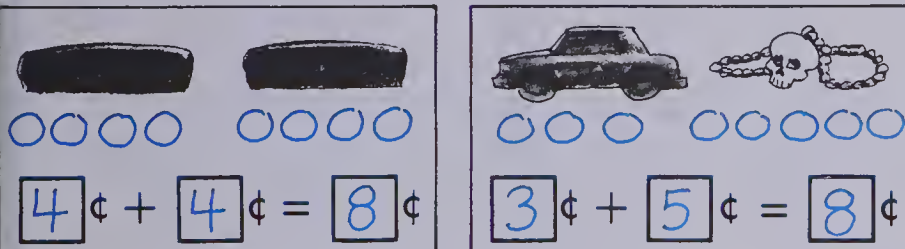
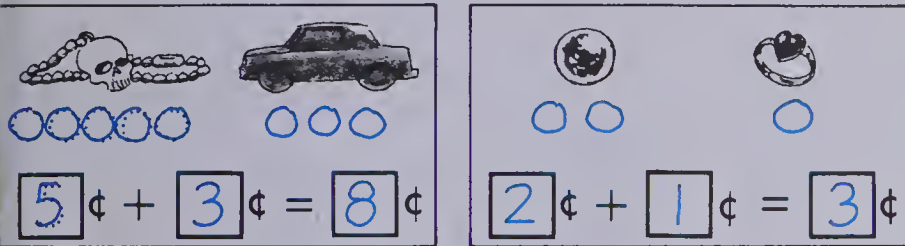
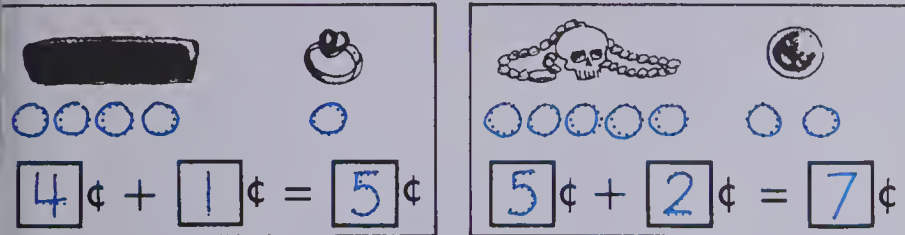
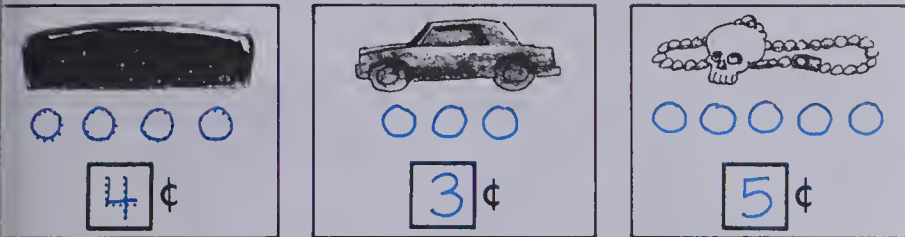
fifty-seven 57

Using the Pages

- Page 57 is a review of the ¢ sign and of counting amounts of pennies.
- On page 58, the students draw and record how many pennies are needed for each toy, and then record how much in all. This page may not be appropriate for less able students.



How many pennies are needed?

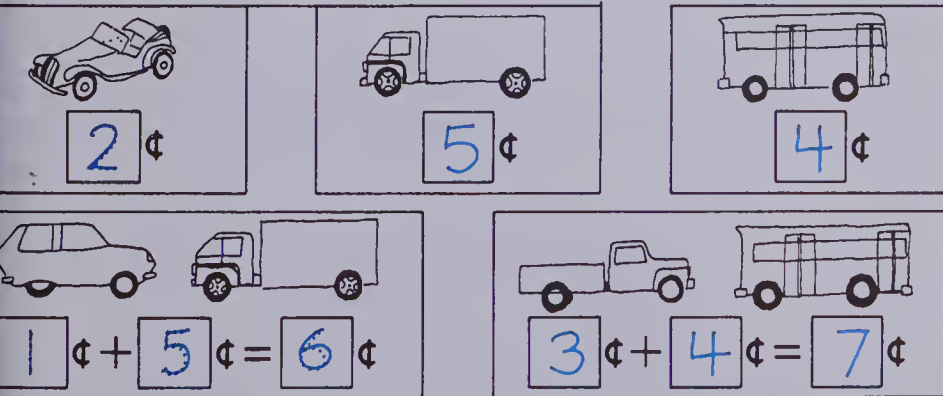


58 fifty-eight Add pennies; problem solving

Extra Practice



How many pennies are needed?



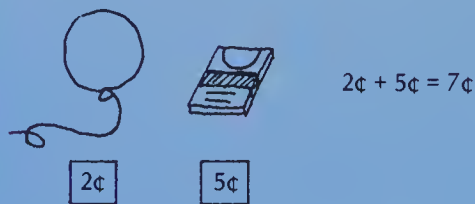
Worksheet M1

Pages 57-58

Reinforcement

1. Play "Heads & Tails." Have the students shake seven pennies and place them on the floor. They then separate the pennies into perhaps 3 heads and 4 tails, or 7 pennies in all. Record each combination as a number sentence on the board: $3 + 4 = 7$. Discuss the distinguishing characteristics of pennies and other coins as they come up in discussion.

2. Set up a store area in the classroom. Use price tags of 10¢ or less and stress the careful counting of pennies to begin. Students can choose two items, then draw their purchases to help them record their own sales slip.



3. Have the children use a penny stamp or pencil rubbings to stamp or trace amounts and then count and record how much in all.

Enrichment

Provide the students with paper, pennies, and pencils. Have them play "Heads & Tails" and record their own combinations on their paper. Vary the number of coins given to each child and the corresponding sum heading on his or her paper.

☺	6¢	★
2¢ + 4¢	☺☺★ ★★	
5¢ + 1¢	☺☺☺☺★	
0¢ + 6¢	★ ★★ ★★ ★★	

Problem Solving Activities

Assign Level 1, Unit 3

LESSON 10

Recognize addition names for numbers 5 to 9 using 0, 1, and 2 as addends.

Across, up and down, counting on
Addition names for numbers
($3 + 2$ is a name for 5)

Placemats
Counters: beans, bingo chips*
Addition Name Cards to sums of 10
Crayons

Give each pupil ten counters and a placemat. Show the Addition Name Cards, asking the students to model the name and then to tell how many in all.

Using the chalkboard, review several solution procedures for addition.

a. $\bullet \bullet \bullet \bullet$
 $2 + 3 = \underline{\hspace{2cm}}$

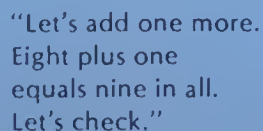
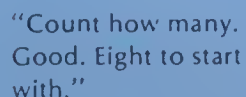
b. $\bullet \bullet \quad \bullet \bullet \bullet$
 $\underline{\hspace{2cm}} + \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

c. $\hat{2} + 3 = \underline{\hspace{2cm}}$ (Children draw a model.)

Review the above types of addition examples using a vertical format.

Review adding 1 or 2 to another set by counting on. Use the T placemat and counters. First use plus one examples and then one plus examples.

Have the students practise counting on, adding 1 or 2 as above, only this time cover the greater addend to encourage their visualizing the starting set.



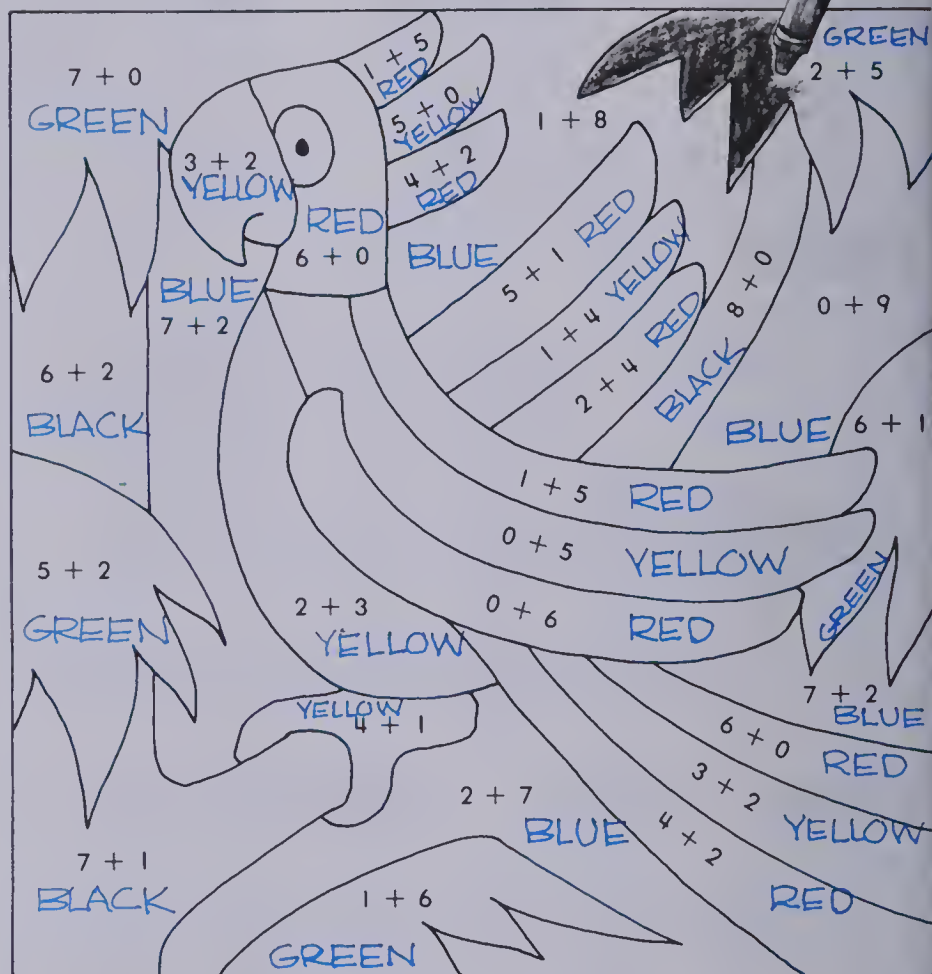
5 yellow

6 red

7 green

8 black

9 blue



Nomes for numbers 5 to 9

fifty-nine 59


- Provide the pupils with placemats, counters, and crayons for page 59. Do several examples with them. Choose an addition name such as $4 + 2$. Have the children model it on their mats, find the sum, and colour that space in the colour indicated for $4 + 2$. Emphasize that $4 + 2$ is another name for 6.


Show the students how to draw a simple picture and make it a colour-by-number exercise, as on page 29. To begin, use numbers (rather than names for numbers).




1 = red
2 = blue
3 = green


Add.



 $2 + 3 = \boxed{5}$



 $3 + 1 = \boxed{4}$


 $7 + 0 = \boxed{7}$

Draw. Add.


 $1 + 4 = \boxed{5}$


 $6 + 2 = \boxed{8}$


 $2 + 4 = \boxed{6}$

Add.

$$\begin{array}{r} 8 \\ + 1 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 2 \\ + 7 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 3 \\ + 2 \\ \hline 5 \end{array}$$


Draw. Add.


$$\begin{array}{r} 4 \\ + 1 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 2 \\ + 2 \\ \hline 4 \end{array}$$

$$\begin{array}{r} 0 \\ + 3 \\ \hline 3 \end{array}$$

Add.


 $2¢ + 2¢ = \boxed{4}¢$


 $4¢ + 1¢ = \boxed{5}¢$

Circle names for 5.

$2 + 3$

$1 + 4$

$2 + 2$

$5 + 0$

$4 + 1$

$4 + 0$

$3 + 2$

$4 + 2$

$2 + 5$

Informal Assessment

1. Addition Concepts

Using counters, ask a child to describe what is happening. Make a set of 3 and another set of 4 in a different colour. Can the child identify the subsets and the whole? Can the child record a number sentence to describe the situation?

$$3 + 4 = 7$$

Reverse the procedure. Record:

$$6 + 2 = \square$$

Ask the student to interpret the symbols for you. Can the student orally read it and model it with counters?

Children who are confident in their work with numbers will often think and work differently from less mature and less confident children.

- Does the student rely on counters or fingers, draw a picture, or just think the answers?
- Does the child use a counting method such as counting out both subsets and then counting from one to the sum (counting all)? Can the child count on?

$$7 + 2 = \square \quad \text{I have 7, ..., 8, 9.}$$

Can the child count on from the greater addend?

$$2 + 5 = \square \quad \text{I have 5, ..., 6, 7.}$$

2. Counting Skills

Assess counting skills to date:

- Rote counting: "How high can you count? Start at 1."
- Rote counting on: "Start at 14; 27; 35."
- Assess both counting by ones and counting on using objects: "Count the blocks I have here." "Pretend I have 25. Now how many (add one) do I have?"

3. Vocabulary for Addition

Have the child read number sentences aloud. Note the language used. Use horizontal and vertical forms. Ask if they can read it using other words.

$$2 + 4 = 6$$

"Two and four gives six."

"Two plus four equals six."

4. Printing Skills

As the student writes his or her sums, check to see that each numeral is being properly formed.

UNIT 3

TEST

sums to 10 involving an addend of 1, 2, or 0

Part 1:
Solving horizontal addition sentences:
(a) given an illustration, (b) by drawing a model.

Part 2:
Solving vertical addition sentences:
(a) given an illustration, (b) by drawing a model.

Part 3:
Adding pennies, given an illustration

Part 4:
Recognizing names for numbers (provide counters)

UNIT 4

Subtraction

Theme: Finding Differences

Lesson	Objective		Pages
1	A10	Interpret subtraction situations and recognize the minus symbol.	61-62
2	A11	Record horizontal subtraction sentences for pictured subtraction situations.	63-64
3	A12	Interpret and record subtraction sentences for pictured subtraction situations.	65-66
4	A13	Subtract using vertical form.	67-68
5	A14	Subtract one from numbers to ten and count back from ten to zero.	69-70
6	A15	Subtract two from numbers to ten.	71-72
7	A16	Subtract zero from numbers to ten.	73-74
8	A17	Subtract from numbers up to five.	75-76
9	M2	Subtract and solve problems involving pennies.	77-78
10	A18	Recognize subtraction names for numbers 1 to 10.	79
Test		Subtraction facts to 5	80

Vocabulary

take away
minus
whole
in all
number sentence
count forward
up-and-down sentence
subtract one
subtract two
go back
none
subtraction names
pennies
price
buy

subtract
part
altogether
separate
equals
count back
balance
one less
two less
subtract zero
less zero
cents
cost
spend
pay

Printed Directions:

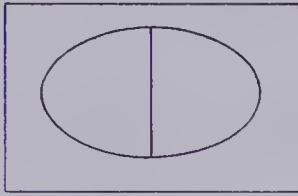
Subtract.
Count back.
Cross out.
Go back two.
How many pennies are left?
Deliver the letters.

Materials

Numeral Cards: $\boxed{0}$ to $\boxed{10}$ —for Teacher (T) and for Pupils* (P)

Sign Cards: $\boxed{-}$ and $\boxed{=}$

Placemats:

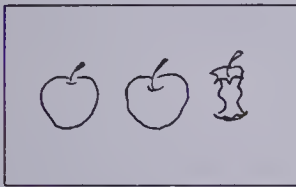


—for teacher and each pupil

Subtraction Name Cards: $\boxed{6 - 2}$

Price Tag Cards: $\boxed{1\text{¢}}$ to $\boxed{10\text{¢}}$

Subtraction Picture Cards:



Number Word Cards: $\boxed{\text{zero}}$ to $\boxed{\text{ten}}$

Floor number line from 0 to 20

Wall number line from 0 to 20

pan balance

blocks

interlocking cubes

feltboard

felt cutouts

pencils

scissors

crayons

unlined paper

egg cartons

boxes

cookies

paper plates

jars

old toys

counters:

beans

bingo chips*

pennies*

*Available in Houghton Mifflin K-2 Activity Kit

About This Unit

Unit 4 introduces the operation of subtraction. In earlier chapters the concept of subtraction has been formally introduced and developed through the use of concrete materials in lesson activities, and in conjunction with counting and addition. In this chapter the transition is made from these ideas at the concrete level to illustrations and symbols.

Unit 4 emphasizes subtraction concepts and ways of recording a variety of real-life subtrac-

tion situations. No stress is placed on recall at this time. Illustrations or concrete models are meant to be used with all subtraction examples. In later units the focus shifts to more abstract methods of solving subtraction questions as a step toward recall of basic facts.

Prerequisites

It is important to look carefully at each student's understanding of number before proceeding with this chapter. Even those who have worked successfully through Unit 3, Addition, may not be ready for subtraction in pictured or symbolic form. Some may require more experience with number at the concrete level, using a materials-based program such as *Mathematics Their Way* (by Mary Baretta-Lorton, Addison Wesley).

Some indicators of readiness for subtraction at the symbolic level include:

1. The ability to work confidently with sets to ten (developed in Units 1 and 2)
 - to count sets accurately;
 - to compare and order sets to 10;
 - to conserve the number of a set despite changes in the arrangement of the objects.
2. The ability to recognize set-subset relationships, e.g., "I have five marbles in all." (Hide two, show three.) "How many are hidden?" (Hide one, show four. Hide zero, show five.) (Developed in the lesson activities of Units 1, 2, and 3.)
3. The ability to interpret and solve addition questions using illustrations or concrete materials. (Developed in Unit 3.)
4. The ability to recognize and distinguish symbols such as + and -.

Subtraction Concepts

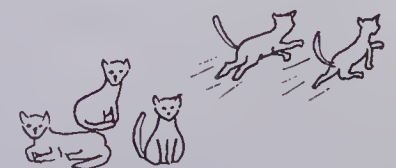
There are several types of subtraction situations.

1. Action take away

5 cats

2 run away.

How many are left?



2. Non-action part-whole

5 blocks

2 are green.

How many are not green?



3. Comparison

John has 5.

Reg has 2.

How many more does John have?



4. Additive

2 blocks showing.

5 blocks in all.

How many are hidden?



In Unit 4 both the action take away and non-action part-whole situations are developed. The other interpretations of subtraction are developed later in the program.

The use of action illustrations is limited, due to the difficulty some students have inferring and imagining the starting set. Instead, part-whole situations are emphasized. These more clearly define the starting set, develop the inverse relationship intuitively, and provide a more useful problem solving model than the action take away model.

The inverse relationship between addition and subtraction is developed at the intuitive level through concrete experiences in lesson activities and in certain pupil activities involving part-whole comparisons and counting on.

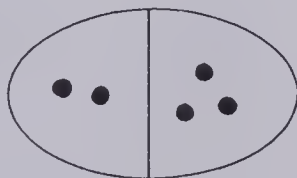
Models for Subtraction

Several models are used to develop the subtraction concepts as outlined above.

Action take away



Part-whole



Cross out
(take away and
part-whole)



Implied action



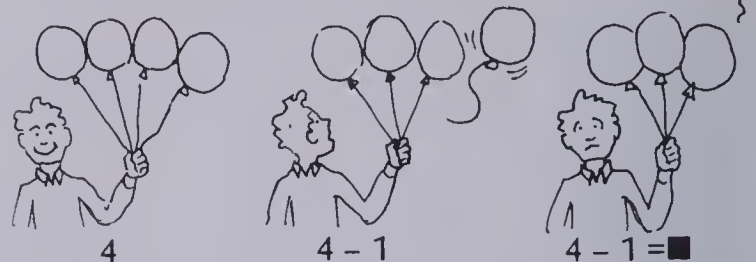
Counting back



In the use of concrete materials and illustrations it is important to emphasize how many there are to start with, before the subtraction takes place.

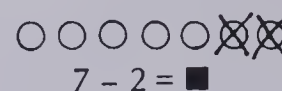
The pupil book uses three methods to establish the starting set.

1. Sequential picture stories



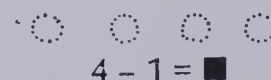
2. Cross out to subtract:

the student crosses out two and records the remaining subset.



3. Draw, then subtract:

the student draws the starting set, crosses out a subset, then records the remaining subset.



In work with concrete materials when the students are to "take away" a subset, encourage them simply to move the subset aside, not to remove it from view. This helps to establish the set-subset relationship, the reversibility of joining and separating, and prevents the confusion of subtraction with a "disappearing" operation.

Vocabulary for Subtraction

Throughout the unit a variety of subtraction terms is used. To begin, the term "take away" may be most meaningful to the students. However, since many situations involving subtraction do not involve taking anything away, it is advisable also to familiarize students with more abstract terms, such as *subtract* and *minus*. This can gradually be accomplished by pairing familiar and unfamiliar vocabulary, e.g., "Good. You took away two; you subtracted two."

As in earlier units, the words zero through ten appear on some pages, however, the ability to read these words is not essential to the exercises. The sight reading vocabulary for these words is considered an enrichment objective.

Activity Centre

Organize a Subtraction Centre in your classroom. The activities suggested here involve hands-on materials and are meant to be used in conjunction with the paper and pencil subtraction exercises provided on pupil pages. As in the Addition Centre activities, the Subtraction Centre activities use real-life materials in subtraction situations. This helps to develop understanding through a meaningful and motivating context. Many of the materials from the Addition Centre can be used for these subtraction ideas; this helps to emphasize the reversability of the two operations and simplifies the organization of the Subtraction Centre.

In these subtraction activities emphasis is placed on constructing the starting set (the whole or sum), next separating or identifying a subset, then identifying the remaining subset. A variety of subtraction situations are developed:

1. take away situations, where objects are actually removed;
2. crossing out to represent take away situations;
3. set partitioning situations where the starting set is separated into two subsets;
4. colouring to partition a set;
5. before-and-after situations of implied action.

As with the addition materials, two basic activities can be applied to each set of materials:

1. provide a number name or open sentence to be modelled with the materials;
2. find or record a number name or number sentence to describe the materials.

Subtraction Centre Activities

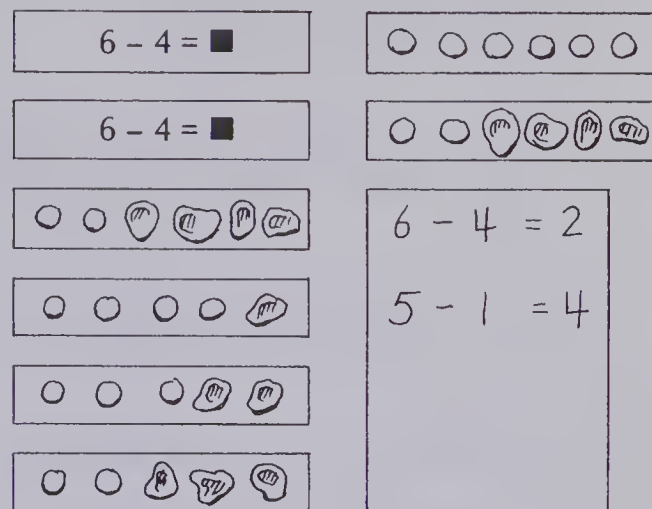
1. Plasticene Marbles or "Squish"

Materials:

Plasticene, stiff cardboard strips, subtraction cards $6 - 4 =$.

- a. The student reads the number sentence and models a starting set of 6 balls.
- b. The student flattens (or squishes) 4 marbles and is left with 2.
- c. After several cards have been completed, the student can record a subtraction name or sentence to describe each set. Or, the student can mix then match the

initial set of subtraction cards to corresponding models.



- d. An alternative is to provide each student with a worksheet of subtraction examples. The materials are used as an aid to finding differences.

2. Pull the Plug

Materials: Paper plates with subtraction names printed on them and holes punched in (e.g., $5 - 2$, 5 holes); golf tees.



Students plug the holes to get the starting set, then remove plugs to find the other subset.

3. Egg Cartons

Materials: egg cartons, blocks or large beads or chestnuts.

$$6 - 2 =$$

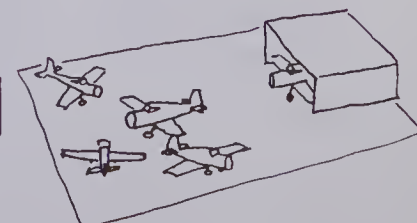


Students put the starting set in the egg holders, then move a subset to the lid.

4. Airport

Materials: toy planes (or cardboard cutouts), cardboard runway, box for a hanger.

$$5 - 1$$

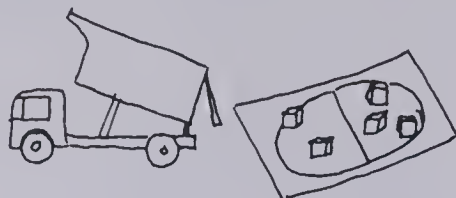


Students put the starting set on the runway, then subtract or remove some planes to the hanger.

5. Dump Truck

Materials: toy truck, boxes or blocks for loading, partitioned placemats for unloading.

$$5 - 2 = 3$$



Students load the starting set on the truck, then unload a subset on the placemat platform.

6. Bead Necklaces

Materials: shoe laces, beads, clothespins.



$$6 - 3$$

$$5 - 3$$

Students string the starting set then separate a subset. Clothespins can be used to keep the subsets separate.

7. Block Trains

Materials: blocks that join.



$$5 - 2$$

$$6 - 1$$

Students build the starting set, then break off a subset. Ask them to use a different colour of blocks for each example.

8. Rodeo

Materials: toy horses or cows, string for lassoes.



$$5 - 2$$

Students put out a starting set of animals, then lasso a subset.

9. Before and After Cards

Materials: card sets, 10 of each type.

Front

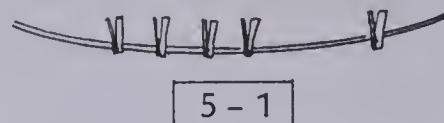
children standing
matches burning
balloons
apples

Back

some children sitting
some matches burnt out
some balloons popped
some apple cores

10. Clotheslines

Materials: pieces of rope, clothespins.



$$5 - 1$$

Students clip on a starting set then separate a subset.

11. Fences

Materials: felt trees, fence, felt field glued to cardboard.

$$6 - 2 = \blacksquare$$



Students build the starting set of trees, then "fence off" a subset.

Ideas

1. Graphing

These graphing suggestions emphasize classifications in which a total number is divided into two subsets. The students will grasp intuitively the idea of subtraction as a part-whole situation; given the whole and a part, we can subtract to find the other part. These simple graphs can be extended to include more information after the initial classification has been recorded.

a. Class Graph

Mr. Richie's Class 23 children	
10 girls	13 boys

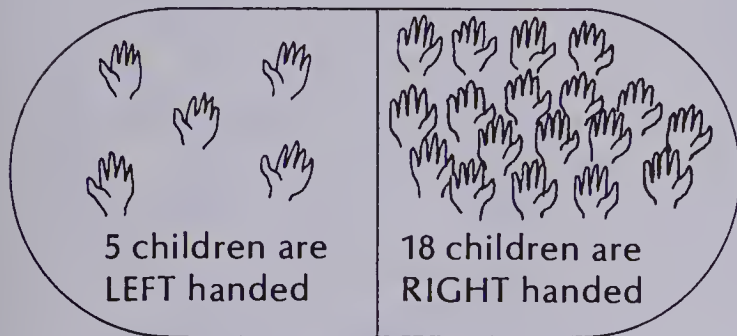
Miss Jones's Class 26 children	
boys	girls

Mrs. Wong's Class 21 children	
boys	
girls	

b. Hands Graph

Have students work in pairs to help each other trace the hand with which they print. Cut out and label hands, then paste them onto a large sheet.

23 children in all

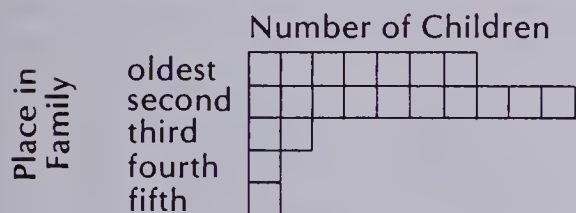


c. Are you the oldest or older child in your family?

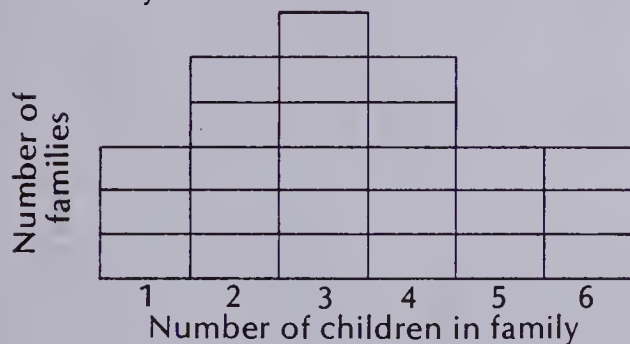
Yes	No
✓	✓
✓	✓
	✓

Extensions:

Are you the oldest, 2nd oldest, 3rd oldest, etc.?



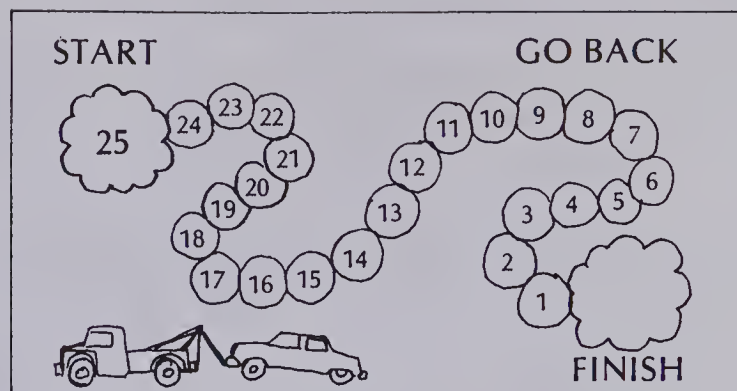
How many children are in your family?



2. Games

a. "Go Back"

Use markers for 2 to 4 players. Provide a die and a game board with a twisting number path from 25 to 0, 35 to 0, or 50 to 0. Each player rolls the die and counts back orally that number of times while moving the marker to tally the count. The emphasis should be on providing oral practice in counting back. The first player to reach zero wins.




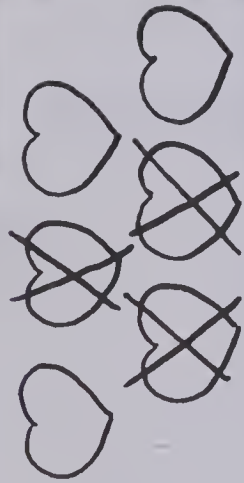
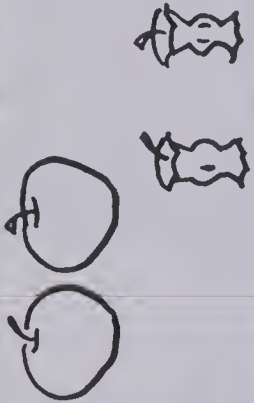
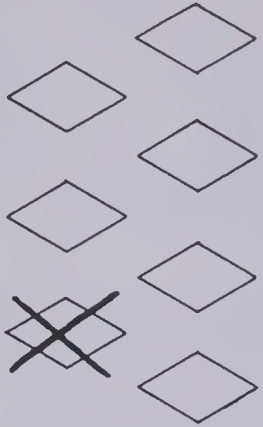
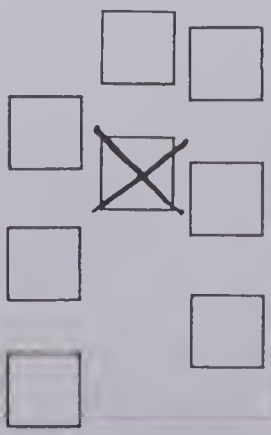
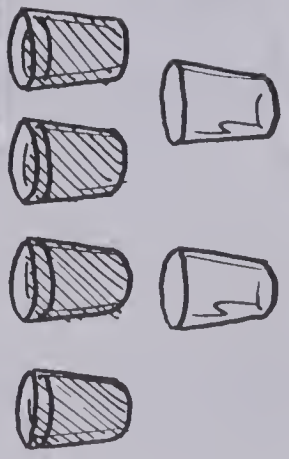
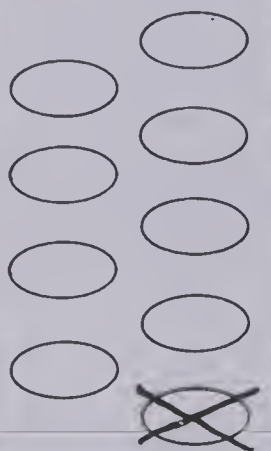
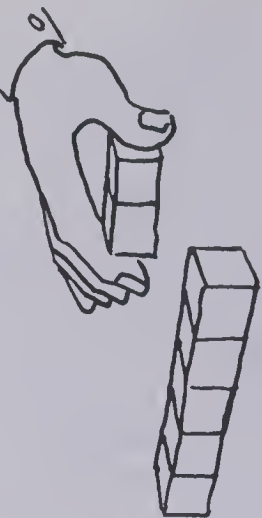
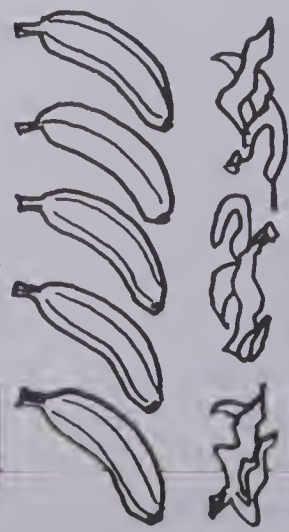
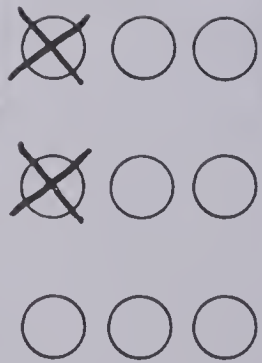
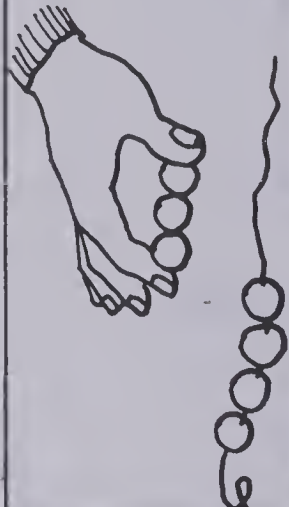


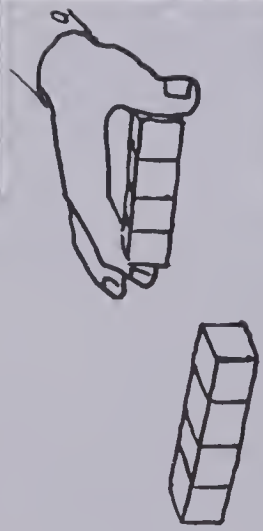
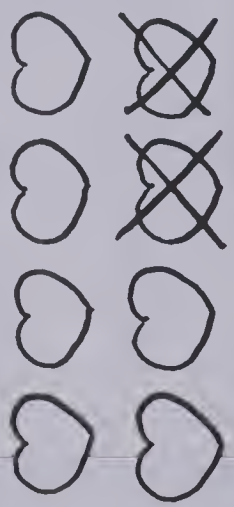
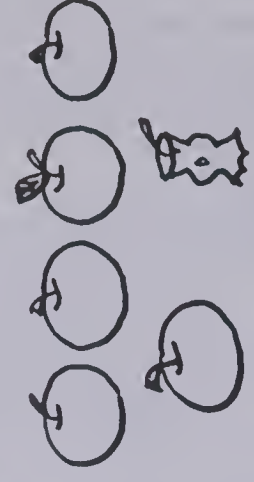
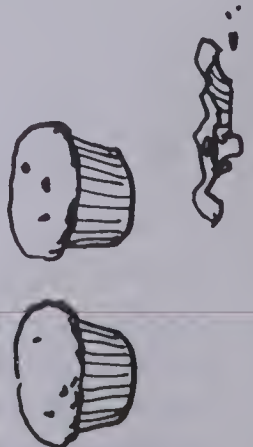
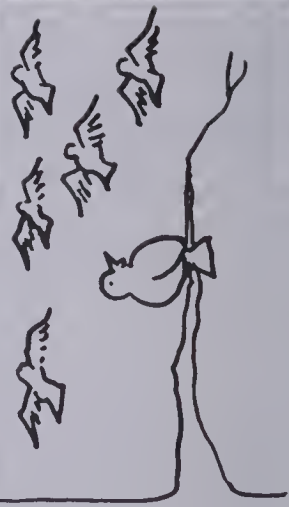
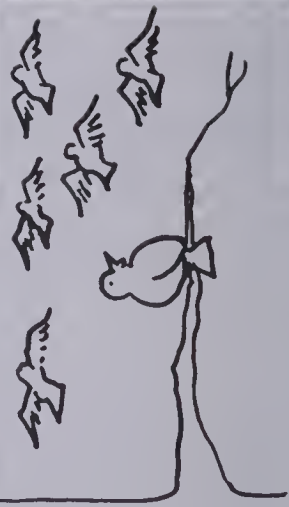
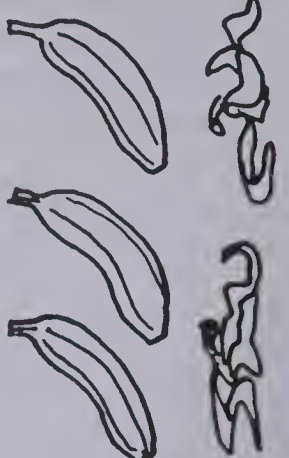
b. "Hidden Eggs"

Provide counters and egg cartons for each of 2 to 6 players. Each player chooses a set of up to ten eggs for his or her carton. One at a time each pupil says how many in all, removes a subset to the lid of the carton, and asks the next student to guess how many are hidden. If the next one guesses correctly, he or she takes a turn. A wrong guess means a missed turn, and the next child in the circle is called upon.



"I have 6 in all.
How many are hidden?"

Subtraction Picture Cards

UNIT 4 LESSON 1

Objective A10

Interpret subtraction situations and recognize the minus symbol.

Vocabulary

Take away, subtract, minus, part, whole, altogether, in all

Materials

Feltboard
Felt pictures
Blocks

Introducing the Lesson

Using the feltboard, felt pictures, and materials from the classroom, act out and encourage the students to describe these action and non-action subtraction situations. Emphasize first the whole, or how many in all, then the part.

1. "How many children are at the table?" Five.
"How many are boys?" Two. "The rest are ..." girls.
"How many are girls?" Three. (Separate the group of five to show the subsets.)
2. "Six children are at the pencil sharpener. Two sit down. How many are left?"

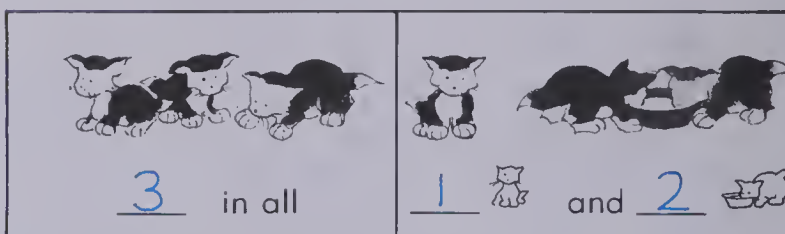
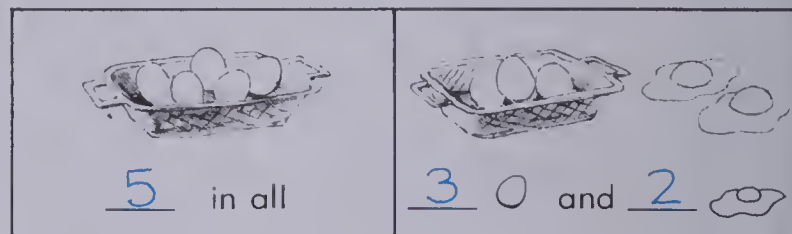
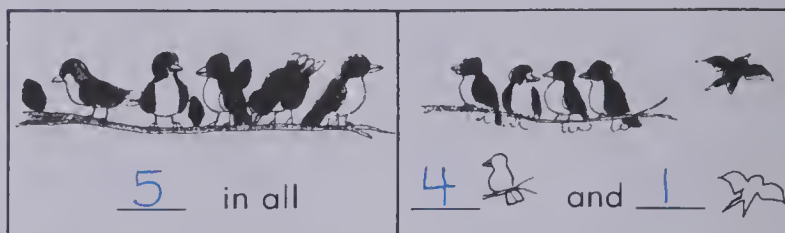
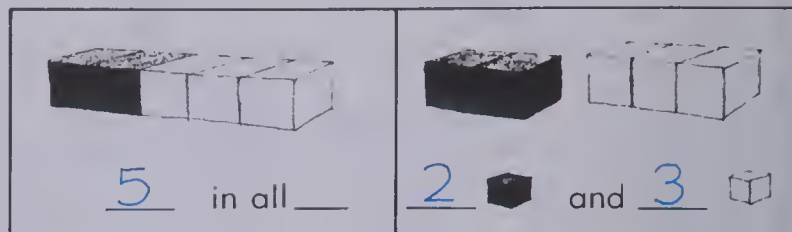
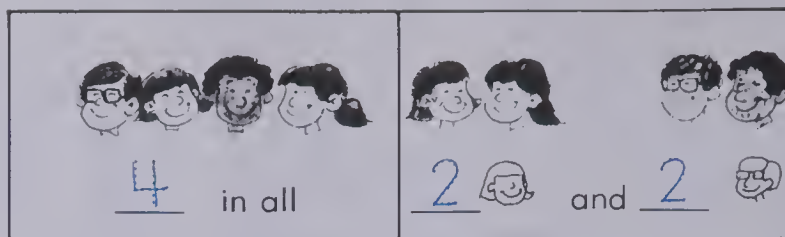
After each example, say a number sentence to describe the situation:
"Ten children minus (or, take away) four children leaves six children in line. 10 subtract 4 equals 6."

Since subtraction involves many situations, not all of which are take away, familiarize students with more than one word for the minus symbol.

Teaching the Lesson

Using blocks, ask the students to follow directions such as the following.

1. "Take six blocks, hide one, how many are left? Six subtract one equals ...?" Five.
2. "Take eight blocks, move two over, how many are still in place?" 8 minus 2 equals 6.
3. "What am I doing?" (Put out a set, for example, of seven, and separate it into subsets. Move two leaving five in place.)



Introduce subtraction situations; problem solving

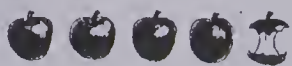
sixty-one 61

Using the Pages

- Introduce the minus sign to the class.
- Pages 61 and 62 are designed to be used in a teacher guided lesson with the students following along, describing each subtraction situation, and recording answers where necessary.
- On page 61, emphasize "how many in all" as the students count and record. Then focus on the subsets; students count and record using the picture clues as guides to each subset.
- On the top of page 62 the students count and record how many in the beginning situation. Ask them what subtraction action has taken place in the adjacent picture. "There are five apples to start. 5 describes this picture. One is eaten. Five subtract (minus, take away) one describes this other picture."
- On the bottom of page 62 the students must first identify how many there were to begin with, then how many have been subtracted.



5



5 - 1



4



4 - 1



5



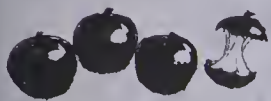
5 - 3



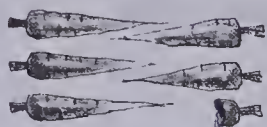
3



3 - 2



4 - 1



6 - 1



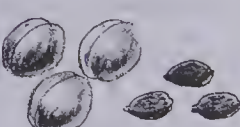
6 - 2



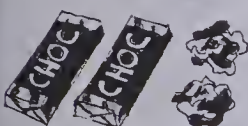
5 - 2



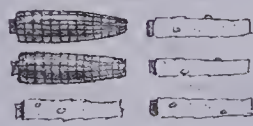
5 - 1



6 - 3



4 - 2



6 - 4



5 - 3

Reinforcement

1. Provide a set of cards with subtraction names that match pictures: $4 - 1$.



Use one theme, such as cup-cakes, with a variety of number combinations. Mix the cards and ask the students to match them.

2. Using old magazines, look for pictures involving before and after situations for discussion:

six cars, one that has been wrecked;
five children, two who are dirty.

3. Describe subtraction situations for the students to illustrate.



five balloons, two get popped

Enrichment

Using the before and after pictures from Reinforcement activity 2, have the more able students provide subtraction names for each, either orally or on cards.

5-2



Extra Practice

Worksheet A10

Pages 61-62



5 - 1



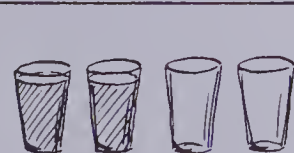
6 - 3



4 - 1



3 - 2



4 - 2



6 - 4

Objective A11

Record horizontal subtraction sentences for pictured subtraction situations.

Vocabulary

Separate, take away, subtract, minus, number sentence, equals

Materials

Blocks
P* and T Numeral Cards
Sign Cards $-$ and $=$

Introducing the Lesson

Provide each pupil with eight to ten blocks. Practise building a set, separating a subset, and identifying how many remain.

After several oral examples, use the T Numeral Cards to describe what the children are doing with the blocks.

6

2

6 - 2

4

6 - 2 = 4

Teaching the Lesson

Using chart paper and a felt pen, draw sets, cross out subsets, and then have the students describe this action.

○ ○ ○ ○ ○ ○ Six.
 ○ ○ ○ ○ ~~○~~ ~~○~~ Six subtract two.
 “How many left?” Four.
 “Good. Six minus two equals ...?” Four.

Provide the students with P Numeral Cards. Draw sets, cross out subsets, then have the students show with their cards what is happening.

5

1

5 - 1

4

5 - 1 = 4

“How many left?”
 “Read your **number sentence** for me.”
 5 minus 1 equals 4.

Using T Numeral Cards and providing blocks for each pupil, play the set changing game in which pupils add or subtract blocks to show the number on the card.

5

2

5 - 2

3

5 - 2 = 3

4

1

4 - 1

3

4 - 1 = 3

6

2

6 - 2

4

6 - 2 = 4

6

3

6 - 3 = 3

4

5 - 1 = 4

5

3

5 - 3 = 2

1

4 - 3 = 1

Introduce = in subtraction sentences; problem solving sixty-three 63

Using the Pages

- Pages 63 and 64 emphasize what was there to begin with, or the whole, before looking at the parts.
- Students are to interpret and record what is happening in each picture. The less able students should do these pages with you in a guided lesson that emphasizes the appropriate language.
- All may benefit from doing the top three examples on both pages with you. Pupils who have difficulty with the last row on both pages should have more oral work with concrete materials before proceeding with the next workbook exercises.

4

4 - 1

4 - 1 = 3

6

6 - 2

6 - 2 = 4

5

5 - 3

5 - 3 = 2

4

4 - 2

4 - 2 = 2

5 - 2 = 3

4 - 3 = 1

5 - 4 = 1

3 - 1 = 2

6 - 3 = 3

5 - 1 = 4

64 sixty-four Horizontal subtraction sentences; problem solving

Extra Practice

Worksheet A11

Pages 63-64

<div>3 - 1 = 2</div>	<div>6 - 2 = 4</div>	<div>5 - 4 = 1</div>
<div>3 - 2 = 1</div>	<div>4 - 3 = 1</div>	<div>5 - 2 = 3</div>

Reinforcement

1. Students having difficulty recognizing the starting set in subtraction situations would benefit from small group or individual work with concrete materials and matching illustrations.

“Draw 4 of these.” ○ ○ ○ ○

“What have I done?” *You covered two.*

“Show me on your picture. Use X’s.”

○ ○ ~~○~~ ~~○~~

“What did you have to start?” *Four.*

“What did you do?” *I crossed out two.*

“Good. 4 cross out 2; 4 subtract (minus, take away) 2.”

“How many are left?” *Two.*

2. Provide each student with two cards (about 6 cm × 10 cm). One card should have a subtraction name on it (4 - 2, 3 - 1, 7 - 4, etc.), while the other should be blank. Ask the students to draw a picture to match.

5 - 1

4 - 2

Use these as a matching game for the classroom.

3. Have the students do the “Pull the Plug” activity suggested in the Subtraction Centre activities of the introduction to this unit.

Enrichment

Play an acting game using objects from around the classroom. Show a subtraction name card such as $5 - 1$

Choose one student to make up a story using 5 - 1, for instance, “I had 5 crayons in my desk. I used one up. Now I have only 4 left.”

Objective A12

Interpret and record subtraction sentences for pictured subtraction situations.

Vocabulary

Subtract, take away, minus, count back
Direction word: Subtract.

Materials

Beans (8 to 10 per student)
Paper and crayons

Introducing the Lesson

Provide each student with five beans.

Direct the class to "follow and do."

"Shake your five beans.

How many do you have in your hands?"



"Now subtract one.

How many are left in your other hand?"



Open and check."

"Put four and one together. How many?"



"This time, subtract three.

Five subtract three equals ...?"

"Open and check."



Teaching the Lesson

Practise counting forward and back to 10 using counters. Go slowly and count only to five at the outset.

Provide each student with paper and a crayon. Give directions as they draw.

"Draw six dots." • • • • •

"Subtract two; cross out two." • • • • ✕ ✕

"How many are left?" Four.

"How many were there to begin?" Six.

"How many were subtracted?" Two.

"Good. Six subtract two equals ...?" Four.

"Print the number sentence with me."

$$6 - 2 = 4$$

"Six subtract (minus, take away) two equals four."

Subtract.

$$4 - 2 = 2$$

$$6 - 3 = 3$$

$$5 - 1 = 4$$

$$3 - 1 = 2$$

$$5 - 2 = 3$$

$$4 - 3 = 1$$

$$5 - 3 = 2$$

$$3 - 2 = 1$$

$$6 - 1 = 5$$

$$6 - 4 = 2$$

$$4 - 1 = 3$$

$$7 - 3 = 4$$

$$5 - 4 = 1$$

$$6 - 2 = 4$$

$$7 - 2 = 5$$

$$5 - 4 = 1$$


Subtract in horizontal form

sixty-five 65

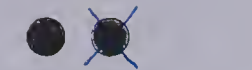
Using the Pages

- Page 65 requires translation of a picture to help find differences in subtraction sentences. The last two rows require using the picture to write the subtraction sentence.
- Page 66 introduces drawing a model to help solve a sentence. The starting set is given at the top of the page, while the entire model must be drawn for the bottom section. Drawing the starting set and then crossing out a subset helps children to focus on the whole-part relationship. Some will require assistance for this exercise.

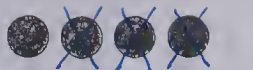
Subtract.




$$5 - 2 = \boxed{3}$$




$$2 - 1 = \boxed{1}$$



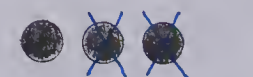
$$4 - 3 = \boxed{1}$$




$$4 - 1 = \boxed{3}$$




$$5 - 1 = \boxed{4}$$




$$3 - 2 = \boxed{1}$$



$$3 - 1 = \boxed{2}$$




$$4 - 2 = \boxed{2}$$




$$5 - 3 = \boxed{2}$$


Draw. Subtract.




$$6 - 2 = \boxed{4}$$




$$4 - 1 = \boxed{3}$$




$$5 - 2 = \boxed{3}$$




$$3 - 2 = \boxed{1}$$




$$7 - 3 = \boxed{4}$$




$$6 - 4 = \boxed{2}$$



$$7 - 1 = \boxed{6}$$



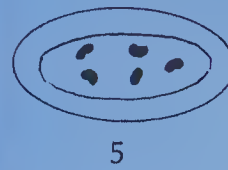
$$6 - 3 = \boxed{3}$$



$$5 - 4 = \boxed{1}$$

Reinforcement

1. Use a paper plate and beans. Have the students record subtraction number sentences for your examples.



"How many left?"

$$5 - 1 = \boxed{4}$$

2. Provide the students with $\boxed{+}$ and $\boxed{-}$ cards. Using bingo chips, show 5 and say, "I start with five." Then add or subtract some counters. The students are to hold up the card to show whether you added or subtracted. Repeat, always emphasizing the starting set, and exaggerating the operation of adding or taking away.

3. Play "Squish" as suggested in the Subtraction Centre Activities of the introduction to this unit.

Enrichment

Provide each student with a paper, pencil, and crayons. Instruct them to listen to each subtraction example and draw it. Say the corresponding number sentence for them to record.

"Draw six apples. Colour two green. Colour the rest red. How many are red?" $6 - 2 = 4$


"Draw five blocks. Colour three yellow."

"Draw seven balloons. Colour one blue."


Extra Practice

Worksheet A12


Pages 65-66



$$4 - 1 = \boxed{3}$$




$$5 - 3 = \boxed{2}$$




$$6 - 3 = \boxed{3}$$


Draw. Subtract.



$$5 - 1 = \boxed{4}$$



$$3 - 2 = \boxed{1}$$



$$6 - 4 = \boxed{2}$$

UNIT 4 LESSON 4

Objective A13

Subtract using vertical form.

Vocabulary

Subtract, take away, minus, count forward, count back, balance, up-and-down sentence

Materials

Number line to 20
Pan balance

Introducing the Lesson

Display the number line so that students can read it as they count. Practise counting forward and back. Use a clap to indicate when to change directions.

Using the pan balance and blocks, try a balancing game where the students count on to make both sides equal.



"How many here?" "How many here?"
Six. Two.

"How can we make the same number on both sides?" *Add more to the side with two.*

"How many more? Let's count. Here are two." *Three, four, five, six.*

"Two plus how many give us six?" 4.

Teaching the Lesson

To introduce vertical subtraction, review the use of horizontal and vertical addition sentences.

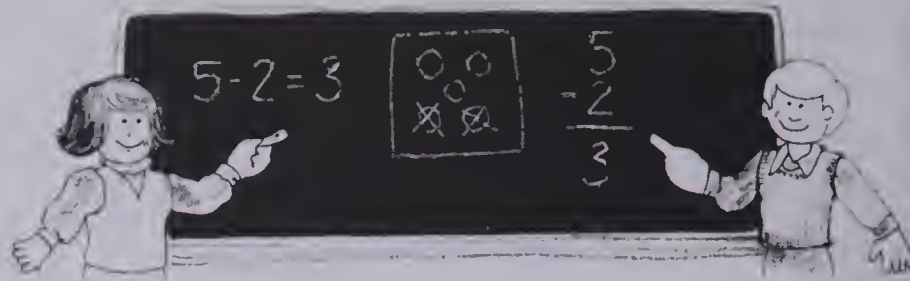
Show how the same model can illustrate horizontal and vertical subtraction sentences. Emphasize that the number we start with (or the whole) goes on top in the vertical subtraction sentence.

$$\begin{array}{r} \bigcirc \bigcirc \bigcirc \bigcirc \times \\ 4 \\ -1 \\ \hline 3 \end{array}$$

"Four minus one."

$$4 - 1 = 3$$

Have the students take turns coming to the chalkboard to try recording up-and-down sentences from subtraction models, as the others do the same individually.



Subtract.

$$\begin{array}{r} 4 \\ -1 \\ \hline 3 \end{array}$$

$$4 - 1 = 3$$

$$\begin{array}{r} 6 \\ -2 \\ \hline 4 \end{array}$$

$$6 - 2 = 4$$

$$\begin{array}{r} 5 \\ -4 \\ \hline 1 \end{array}$$

$$5 - 4 = 1$$

$$\begin{array}{r} 5 \\ -1 \\ \hline 4 \end{array}$$

$$5 - 1 = 4$$

$$\begin{array}{r} 8 \\ -4 \\ \hline 4 \end{array}$$

$$8 - 4 = 4$$

$$\begin{array}{r} 6 \\ -3 \\ \hline 3 \end{array}$$

$$6 - 3 = 3$$

$$\begin{array}{r} 4 \\ -2 \\ \hline 2 \end{array}$$

$$4 - 2 = 2$$

$$\begin{array}{r} 7 \\ -1 \\ \hline 6 \end{array}$$

$$7 - 1 = 6$$


Subtract in vertical form


sixty-seven 67


Using the Pages


- Page 67 introduces the vertical form for subtraction. The same model is used for horizontal and vertical forms. Emphasize the starting set.
- Page 68 reviews drawing a picture to help solve and is in vertical form.


Subtract.


$$\begin{array}{r} 4 \\ -1 \\ \hline 3 \end{array}$$



$$\begin{array}{r} 5 \\ -3 \\ \hline 2 \end{array}$$



$$\begin{array}{r} 3 \\ -2 \\ \hline 1 \end{array}$$


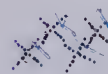
$$\begin{array}{r} 5 \\ -1 \\ \hline 4 \end{array}$$


$$\begin{array}{r} 6 \\ -4 \\ \hline 2 \end{array}$$


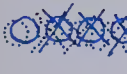
$$\begin{array}{r} 4 \\ -2 \\ \hline 2 \end{array}$$



$$\begin{array}{r} 7 \\ -2 \\ \hline 5 \end{array}$$



$$\begin{array}{r} 3 \\ -1 \\ \hline 2 \end{array}$$



$$\begin{array}{r} 5 \\ -4 \\ \hline 1 \end{array}$$



Draw. Subtract.


$$\begin{array}{r} 4 \\ -3 \\ \hline 1 \end{array}$$



$$\begin{array}{r} 5 \\ -2 \\ \hline 3 \end{array}$$



$$\begin{array}{r} 6 \\ -1 \\ \hline 5 \end{array}$$



$$\begin{array}{r} 7 \\ -1 \\ \hline 6 \end{array}$$


$$\begin{array}{r} 6 \\ -3 \\ \hline 3 \end{array}$$


$$\begin{array}{r} 7 \\ -3 \\ \hline 4 \end{array}$$


$$\begin{array}{r} 5 \\ -4 \\ \hline 1 \end{array}$$


$$\begin{array}{r} 4 \\ -1 \\ \hline 3 \end{array}$$


$$\begin{array}{r} 6 \\ -2 \\ \hline 4 \end{array}$$


Reinforcement

1. Place beans in the sections of an egg carton and play a balancing game. "Six on one side. Two on the other. How many more to get six on both sides?"

2. This activity is a follow up to the lesson's balancing game. Provide the students with a paper, crayons, and a pencil. Help them to fold the paper in eight parts.

Ask the students to draw eggs as follows.

6	000000	000	3
8	00000000	000000	5
7	00000000	00	2
5	000000	0	1

Then, using a crayon, they are to balance the right side so that both sides have equal numbers of eggs.

000000	000000
--------	--------

3. Have the students do the "Dump Truck" activity suggested in the Subtraction Centre activities of the introduction to this unit.

Enrichment

Prepare a set of subtraction picture cards. Ask the students to write both kinds of subtraction sentences for each: "across" and "up and down."



$$5 - 1 = 5$$


$$\begin{array}{r} 5 \\ -1 \\ \hline 4 \end{array}$$


Extra Practice


Worksheet A13


Pages 67-68


Subtract.


$$\begin{array}{r} 3 \\ -1 \\ \hline 2 \end{array}$$



$$\begin{array}{r} 5 \\ -2 \\ \hline 3 \end{array}$$



$$\begin{array}{r} 2 \\ -1 \\ \hline 1 \end{array}$$



$$\begin{array}{r} 4 \\ -2 \\ \hline 2 \end{array}$$


$$\begin{array}{r} 7 \\ -1 \\ \hline 6 \end{array}$$


$$\begin{array}{r} 6 \\ -4 \\ \hline 2 \end{array}$$


$$\begin{array}{r} 5 \\ -4 \\ \hline 1 \end{array}$$


$$\begin{array}{r} 6 \\ -3 \\ \hline 3 \end{array}$$


$$\begin{array}{r} 7 \\ -2 \\ \hline 5 \end{array}$$


UNIT 4 LESSON 5

Objective A14

Subtract one from numbers to ten and count back from ten to zero.

Vocabulary

Subtract one, one less, number sentence, zero, one, two, ..., ten

Direction words: Count back. Cross out.

Materials

P* and T Numeral Cards

Bingo chips*

Box

Cookies

Plate

Introducing the Lesson

Using P Numeral Cards, ask the students to arrange them in order from zero to ten. Read the numerals forward and then back. Pick up the cards and mix them. Ask the students to arrange them in order, but backward this time, from ten down to zero. Ask one student to read his or her sequence aloud, starting at ten as the others check their cards.

Teaching the Lesson

Pass out bingo chips. Show Numeral Card **4**. Ask the students to show four bingo chips. Then show **4 - 1** while the students respond by reading four minus (or subtract) one, covering one, and telling how many are left. 3.

Put ten bingo chips in a box so that they are hidden from view. Have the students tell how many are left each time you remove one. Try adding and subtracting.



Nine, eight, seven, six, seven.

Every so often, empty the box and count to check.

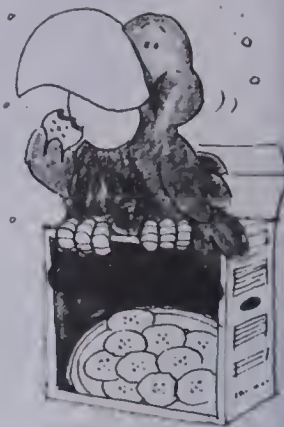
Show T Numeral Cards asking the students to read it and identify the number that is one less. Record the corresponding number sentence on the chalkboard.



$$6 - 1 = 5$$



$$4 - 1 = 3$$



$$2 - 1 = 1$$



$$7 - 1 = 6$$



$$5 - 1 = 4$$



$$10 - 1 = 9$$



$$1 - 1 = 0$$



$$9 - 1 = 8$$

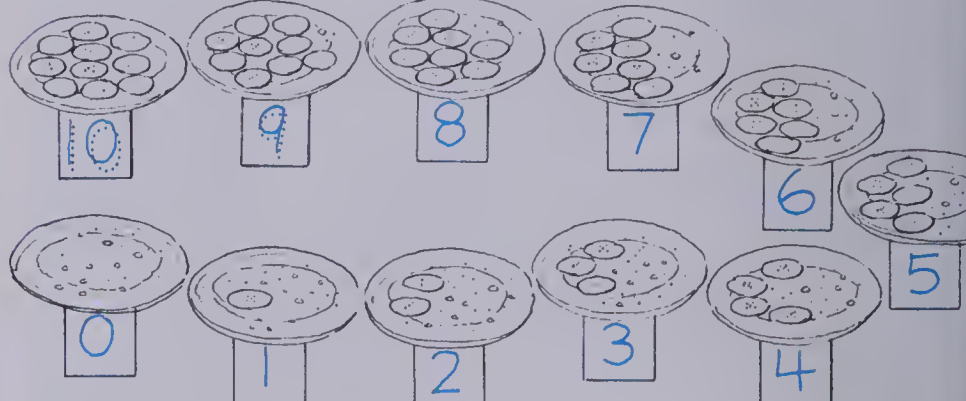


$$3 - 1 = 2$$



$$8 - 1 = 7$$

Count back.



Subtract 1; count back by ones

sixty-nine 69

Using the Pages

- The top of page 69 is similar to the last exercise in the lesson. The bottom of the page gives a counting back sequence.
- Page 70 requires students to subtract one from a given set by crossing out one star. Number words are reviewed, but readings not necessarily required to complete the counting sequence.

Cross out. Subtract.

$$\begin{array}{r} 10 \\ - 1 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 7 \\ - 1 \\ \hline 6 \end{array}$$

$$\begin{array}{r} 4 \\ - 1 \\ \hline 3 \end{array}$$

$$\begin{array}{r} 3 \\ - 1 \\ \hline 2 \end{array}$$

$$\begin{array}{r} 2 \\ - 1 \\ \hline 1 \end{array}$$

$$\begin{array}{r} 1 \\ - 1 \\ \hline 0 \end{array}$$

70 seventy

$$\begin{array}{r} 9 \\ - 1 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 6 \\ - 1 \\ \hline 5 \end{array}$$

$$\begin{array}{r} \text{ten } 10 \\ \hline 9 \end{array}$$

$$\begin{array}{r} \text{nine } 9 \\ \hline 8 \end{array}$$

$$\begin{array}{r} \text{eight } 8 \\ \hline 7 \end{array}$$

$$\begin{array}{r} \text{seven } 7 \\ \hline 6 \end{array}$$

$$\begin{array}{r} \text{six } 6 \\ \hline 5 \end{array}$$

$$\begin{array}{r} \text{five } 5 \\ \hline 4 \end{array}$$

$$\begin{array}{r} \text{four } 4 \\ \hline 3 \end{array}$$

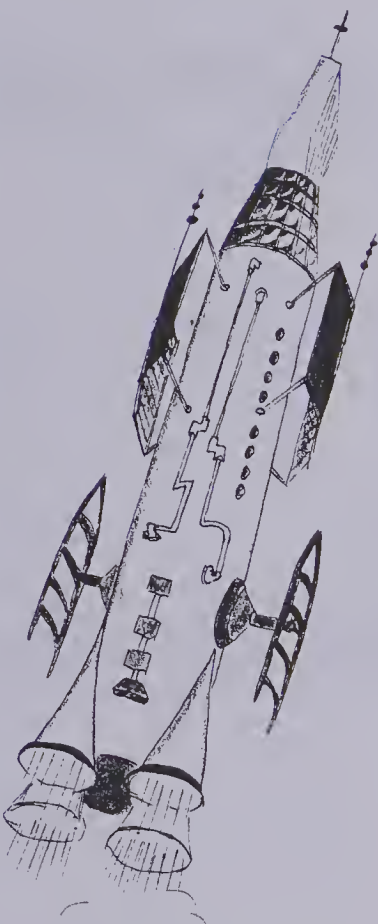
$$\begin{array}{r} \text{three } 3 \\ \hline 2 \end{array}$$

$$\begin{array}{r} \text{two } 2 \\ \hline 1 \end{array}$$

$$\begin{array}{r} \text{one } 1 \\ \hline 0 \end{array}$$

$$\begin{array}{r} \text{zero } 0 \\ \hline \end{array}$$

Blast off!



Subtract ; count back by ones

Reinforcement

1. Put ten cookies on a plate. Pass the cookies. As each pupil takes one, he or she must say a number sentence to describe the plate of cookies.



Seven minus one leaves six on the plate.

Repeat until all have had one turn.

2. Provide card sets of numerals 0 to 10 and/or sets of objects numbered 0 to 10 for ordering forward and back. Cubes that join or paper plates with counters can be used as sets for ordering.

3. Provide each student with a pencil, scissors, crayons, and two pieces of stiff paper. Ask the students to:

- cut a strip approximately 3 cm by 20 cm,
- cut a square or rectangle about 10 cm by 15 cm.

On the strip, they are to draw a line of ten cars. On the square, they are to draw a tunnel. A cut should be made at the entrance of the tunnel so the strip can slide into the tunnel.



Upon completion, the students can follow these directions. "Six cars outside the tunnel, one goes in, how many are left?" After a few examples, they may continue this activity working in pairs.

Enrichment

- Provide the students with cards having the words zero to ten for sight word practice and ordering practice.
- Using the Before and After Cards suggested in the Subtraction Centre activities of the introduction to this unit, ask the students to write horizontal and vertical number sentences for each.

Extra Practice

Worksheet A14

Pages 69-70

Cross out. Subtract.

$$\begin{array}{r} 7 \\ - 1 \\ \hline 6 \end{array}$$

$$\begin{array}{r} 9 \\ - 1 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 5 \\ - 1 \\ \hline 4 \end{array}$$

$$\begin{array}{r} 8 \\ - 1 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 10 \\ - 1 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 1 \\ - 1 \\ \hline 0 \end{array}$$

UNIT 4 LESSON 6

Objective A15

Subtract two from numbers to ten.

Vocabulary

Subtract two, two less, count back, go back

Direction words: Go back two.

Materials

Number line to 20

Blocks that join

Coloured numeral cards (odds—red, evens—green)

Introducing the Lesson

Using the number line, practise oral counting forward and back by ones and twos. Use the “whisper, say, whisper, say” method for twos. (*TEN, nine, EIGHT, seven, SIX, five.*)

On the board, illustrate hops by ones and twos with the number line.

“Start at five. Go back two hops.”



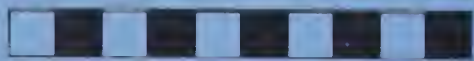
Teaching the Lesson

Showing blocks that join, ask the students to make sets of two. Use them for counting forward and back by twos. The students can add and subtract pairs of blocks as they count.



Two, four, six, eight.

Ask the children to make a train of ten blocks using only two colours.



Use the train for oral counting practice.

“Start at 4.

Go back 2.” *Three, TWO.*

“Start at 9.

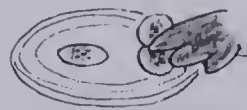
Go back 2.” *Eight, SEVEN.*

Have the students touch each block as they count.

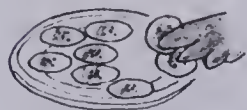
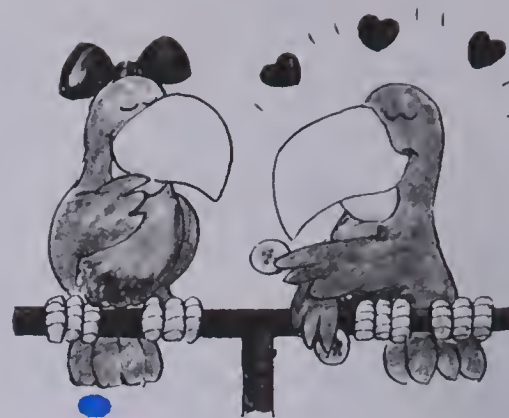
Repeat, this time breaking blocks to show subtracting two. “Start with 7. Break off 2. How many left?” *Five.*



$$6 - 2 = 4$$



$$3 - 2 = 1$$



$$8 - 2 = 6$$



$$5 - 2 = 3$$



$$10 - 2 = 8$$



$$7 - 2 = 5$$



$$4 - 2 = 2$$



$$9 - 2 = 7$$

$$10$$

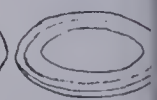
$$8$$

$$6$$

$$4$$

$$2$$

$$0$$



$$\begin{array}{r} 10 \\ - 2 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 8 \\ - 2 \\ \hline 6 \end{array}$$

$$\begin{array}{r} 6 \\ - 2 \\ \hline 4 \end{array}$$

$$\begin{array}{r} 4 \\ - 2 \\ \hline 2 \end{array}$$

$$\begin{array}{r} 2 \\ - 2 \\ \hline 0 \end{array}$$

All gone.

Subtract 2; count back by twos

seventy-one 71

Using the Pages

- On the top of page 71 emphasize what there is to start, what is being removed, and what will remain. At the bottom of the page, review counting back by twos, using only even numbered arrays.
- Suggest that each student use his or her pencil as a marker to play the “Go Back Two” game on page 72. Do one or two examples with the children.

GO BACK TWO

0 1 2 3 4 5 6 7 8 9 10

$$6 - 2 = \boxed{4}$$

$$8 - 2 = \boxed{6}$$

$$9 - 2 = \boxed{7}$$

$$5 - 2 = \boxed{3}$$

$$4 - 2 = \boxed{2}$$

$$2 - 2 = \boxed{0}$$

$$10 - 2 = \boxed{8}$$

$$7 - 2 = \boxed{5}$$

$$3 - 2 = \boxed{1}$$

$$6 - 2 = \boxed{4}$$

72 seventy-two

Subtract 2

Reinforcement

1. Arrange the coloured numeral cards in order from 0 to 10 on the chalk tray. Use a pencil as a marker on the cards. Show the students how to play "Go Back Two." Say an open subtraction sentence, like $6 - 2 = \blacksquare$, as: "Start at 6. Go back 2. Where did you land?"

Ask someone to point to the appropriate cards with the pencil and answer the question. *Four.* Then the subtraction sentence can be completed.

$$6 - 2 = 4$$

0 1 2 3 4 5 6 7 8 9 10

2. Provide each student with ten blocks of two different colours, paper, and a pencil. Have the students build a two-colour train and then print the numerals from one to ten in colours to match the blocks. Use this number pattern for oral counting practice by 2s forward and back.

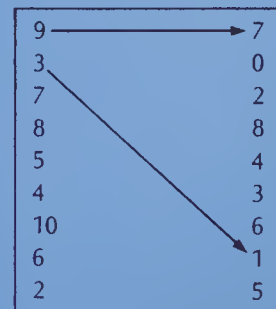
3. Give each student a piece of paper. Have them fold it into 8 sections. Direct them to draw the following sets in each of the sections.

6 fish 8 apples
4 balloons 5 boxes
9 dots 7 triangles
3 cars 10 sticks

Show the children how to cross out two in each set and then record a number sentence to describe the picture.

Enrichment

1. Provide a paper and pencil for each pupil. Have them write two columns of numbers as shown below. Next, ask them to join a number on the left to the number that is two less on the right.



2. Make a Hands graph as suggested in the Ideas section of the introduction to this unit.

Extra Practice

Worksheet A15

Pages 71-72

Subtract two.

0	1	2	3	4	5	6	7	8	9	10
$8 - 2 = \boxed{6}$			$5 - 2 = \boxed{3}$			$9 - 2 = \boxed{7}$				
$2 - 2 = \boxed{0}$			$10 - 2 = \boxed{8}$			$7 - 2 = \boxed{5}$				

Count back.

♥♥♥♥	♥♥♥♥	♥♥♥	♥♥		
♥♥ $\boxed{10}$	♥♥ $\boxed{8}$	♥♥ $\boxed{6}$	♥♥ $\boxed{4}$	♥♥ $\boxed{2}$	$\boxed{0}$
♥♥♥♥	♥♥♥♥	♥♥♥			

UNIT 4 LESSON 7

Objective A16

Subtract zero from numbers to ten.

Vocabulary

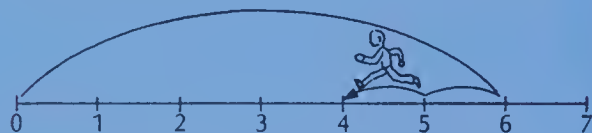
Subtract zero, none, less zero

Materials

Bingo chips*
Floor number line
Jar

Introducing the Lesson

Ask one student at a time to come up and help solve subtraction examples on the floor number line. Write examples involving minus one and minus two from numbers to ten on the chalkboard. Ask one student to "walk out" and solve the example and then to record the difference. $6 - 2 = 4$



Use the terms *subtract*, *minus*, and *take away* along with the term *go back* from the previous lesson.

With a floor or wall number line as a reference, practise oral counting back. "Start at 8. Count back two." *Eight, seven, six.* Encourage the students to use tally marks to keep track of how many hops they have gone back.

Teaching the Lesson

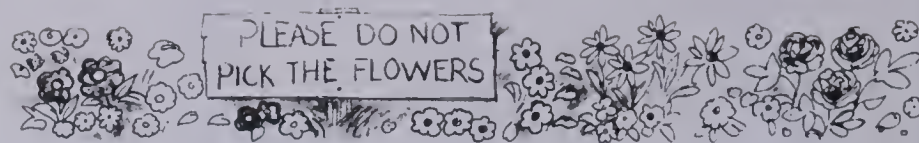
Provide the children with bingo chips. Give oral directions for subtracting one, two, and zero from sets.

"Start with five bingo chips in your hands. Move one chip alone in one hand and put it behind your back. Open your other hand and show me what you have." *Four.*

"Say with me: $5 - 1 = 4$. Take the five chips and shake them again. This time leave zero chips in the hand behind your back. Now there are five minus zero or five chips in the other hand."

Play an imaginary Subtract Zero game using a jar.

"I have eight chocolate bars in here. Subtract zero. How many are left in my jar?" *Eight.*



Subtract.

$$\begin{array}{c} \text{4 flowers} \\ 4 - 0 = \boxed{4} \end{array}$$

$$\begin{array}{c} \text{7 flowers} \\ 7 - 0 = \boxed{7} \end{array}$$

$$\begin{array}{c} \text{3 flowers} \\ 3 - 0 = \boxed{3} \end{array}$$

$$\begin{array}{c} \text{8 flowers} \\ 8 - 0 = \boxed{8} \end{array}$$

$$\begin{array}{c} \text{2 flowers} \\ 2 - 0 = \boxed{2} \end{array}$$


$$\begin{array}{c} \text{5 flowers} \\ 5 - 0 = \boxed{5} \end{array}$$

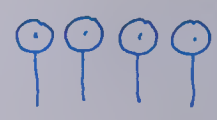
$$\begin{array}{c} \text{9 flowers} \\ 9 - 0 = \boxed{9} \end{array}$$


$$\begin{array}{c} \text{1 flower} \\ 1 - 0 = \boxed{1} \end{array}$$


$$\begin{array}{c} \text{10 flowers} \\ 10 - 0 = \boxed{10} \end{array}$$

Draw. Subtract.

$$\begin{array}{r} 6 \\ - 0 \\ \hline 6 \end{array}$$


$$\begin{array}{r} 4 \\ - 0 \\ \hline 4 \end{array}$$


$$\begin{array}{r} 3 \\ - 0 \\ \hline 3 \end{array}$$


$$\begin{array}{r} 7 \\ - 0 \\ \hline 7 \end{array}$$


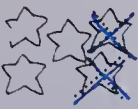
Subtract 0


seventy-three 73


Using the Pages


- Continue the Subtract Zero game to include crossing out zero as at the top of page 73. Emphasize what is there to start, that zero is removed, and what is left.
- On the bottom of page 73 review drawing the starting set, crossing out zero, and recording the remaining number of flowers.
- Page 74 provides mixed practice for minus one, minus two, and minus zero.


Cross out. Subtract.

$$\begin{array}{r} 5 \\ - 2 \\ \hline 3 \end{array}$$



$$\begin{array}{r} 7 \\ - 1 \\ \hline 6 \end{array}$$


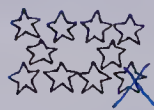
$$\begin{array}{r} 3 \\ - 2 \\ \hline 1 \end{array}$$


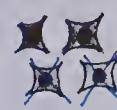
$$\begin{array}{r} 8 \\ - 1 \\ \hline 7 \end{array}$$



$$\begin{array}{r} 1 \\ - 1 \\ \hline 0 \end{array}$$


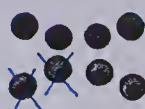
$$\begin{array}{r} 9 \\ - 0 \\ \hline 9 \end{array}$$

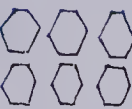

$$\begin{array}{r} 6 \\ - 2 \\ \hline 4 \end{array}$$



$$\begin{array}{r} 10 \\ - 1 \\ \hline 9 \end{array}$$



$$\begin{array}{r} 4 \\ - 2 \\ \hline 2 \end{array}$$



$$\begin{array}{r} 2 \\ - 1 \\ \hline 1 \end{array}$$



$$\begin{array}{r} 8 \\ - 2 \\ \hline 6 \end{array}$$



$$\begin{array}{r} 6 \\ - 0 \\ \hline 6 \end{array}$$



$$\begin{array}{r} 7 \\ - 0 \\ \hline 7 \end{array}$$


$$\begin{array}{r} 3 \\ - 1 \\ \hline 2 \end{array}$$


$$\begin{array}{r} 10 \\ - 2 \\ \hline 8 \end{array}$$


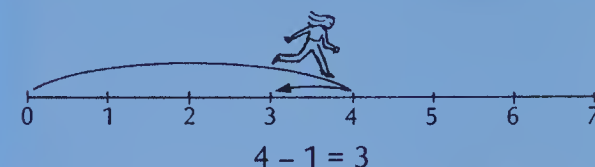
$$\begin{array}{r} 4 \\ - 1 \\ \hline 3 \end{array}$$


$$\begin{array}{r} 9 \\ - 1 \\ \hline 8 \end{array}$$


$$\begin{array}{r} 5 \\ - 0 \\ \hline 5 \end{array}$$


Reinforcement

1. Ask one student to "walk out" a subtraction sentence as the others try to guess the sentence. Direct another pupil to write it.



For the first few examples, cue the students with these questions.

"Where is Peter starting?" *Four.*

"How many did he go back?" *One.*

"Where did he land?" *Three.*

2. Use paper plates numbered from one to ten and Subtraction Name Cards for minus one, minus two, and minus zero ($\boxed{6-1}$, $\boxed{6-2}$, $\boxed{6-0}$). Provide counters for the children to solve the card problems. The cards should then be placed on the plate corresponding to the difference.



3. Write several subtraction names on the chalkboard using minus one, minus two, and minus zero from numbers to 10. Provide the students with paper, pencil, and counters to model and solve the number sentences.

6 - 1	0 0 0 0 0 1 6 - 1 = 5
4 - 2	0 0 1 1 4 - 2

Enrichment

1. For those students who do not require counters to solve subtraction questions, provide flash cards for oral practice.


2. Play "Go Back" as suggested in the Ideas section of the introduction to this unit.

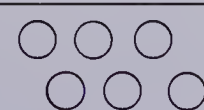
Extra Practice


Worksheet A16


Pages 73-74


Cross out. Subtract.


$$\begin{array}{r} 8 \\ - 1 \\ \hline 7 \end{array}$$


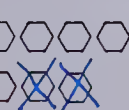
$$\begin{array}{r} 6 \\ - 0 \\ \hline 6 \end{array}$$


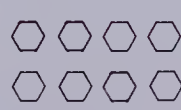
$$\begin{array}{r} 4 \\ - 3 \\ \hline 1 \end{array}$$



$$\begin{array}{r} 2 \\ - 0 \\ \hline 2 \end{array}$$


$$\begin{array}{r} 5 \\ - 2 \\ \hline 3 \end{array}$$


$$\begin{array}{r} 7 \\ - 0 \\ \hline 7 \end{array}$$


$$\begin{array}{r} 9 \\ - 2 \\ \hline 7 \end{array}$$


$$\begin{array}{r} 8 \\ - 0 \\ \hline 8 \end{array}$$


$$\begin{array}{r} 10 \\ - 1 \\ \hline 9 \end{array}$$


UNIT 4 LESSON 8

Objective A17


Subtract from numbers up to five.

Vocabulary

Subtract, minus, take away, subtraction names

Materials

Beans

Placemats 

Subtraction Name Cards

Paper plates numbered from 0 to 5

Scissors

Introducing the Lesson

Give each student several beans and a placemat. Direct the students to:

“Take five beans.”

“Put two on one side.”



“How many will be on the other side?”

Three.

“Good. Five in all, two in one part, three in the other.”



“Cover two; 5 subtract 2. How many left?”

“Now cover three; 5 subtract 3. How many left?”

Teaching the Lesson

Show the Subtraction Name Cards. Ask the students to read them and model them with counters, or to use their fingers to solve them. Ask them to call the number that the subtraction card names.

5 - 2



Five minus two equals three.

Place numbered plates on the floor or table. Distribute a Subtraction Name Card $5 - 3$ to each student. Ask them to find another name for their card (5 - 3, or 2) and to put it on the plate with that name.



$$4 - 2 = 2$$

$$5 - 4 = 1$$

$$5 - 1 = 4$$

$$4 - 1 = 3$$

$$5 - 3 = 2$$

$$2 - 1 = 1$$

$$3 - 1 = 2$$

$$5 - 2 = 3$$

$$2 - 0 = 2$$

$$4 - 3 = 1$$

Cut. 



Subtraction facts to 5

seventy-five 75

Using the Pages

- Page 75 requires the students to cut out each box (5 boxes, one train car on each). These are used to model the subtraction sentences. Do as many examples with the children as necessary.

$$4 - 2 = \blacksquare$$





“Start with four cars. Subtract two.” (Slide two away.)


“How many are left?” $4 - 2 = 2$

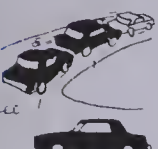
- Page 76 provides a review of vertical subtraction with models.


Subtract.


$$\begin{array}{r} 5 \\ - 2 \\ \hline 3 \end{array}$$



$$\begin{array}{r} 3 \\ - 1 \\ \hline 2 \end{array}$$



$$\begin{array}{r} 4 \\ - 2 \\ \hline 2 \end{array}$$



$$\begin{array}{r} 4 \\ - 3 \\ \hline 1 \end{array}$$



$$\begin{array}{r} 5 \\ - 1 \\ \hline 4 \end{array}$$



$$\begin{array}{r} 2 \\ - 2 \\ \hline 0 \end{array}$$



$$\begin{array}{r} 5 \\ - 3 \\ \hline 2 \end{array}$$


$$\begin{array}{r} 4 \\ - 0 \\ \hline 4 \end{array}$$


$$\begin{array}{r} 5 \\ - 4 \\ \hline 1 \end{array}$$


$$\begin{array}{r} 3 \\ - 2 \\ \hline 1 \end{array}$$


$$\begin{array}{r} 5 \\ - 5 \\ \hline 0 \end{array}$$


$$\begin{array}{r} 4 \\ - 1 \\ \hline 3 \end{array}$$




76 seventy-six

Subtraction facts to 5

Reinforcement

1. Use the T . Play an adding on game.



"I have two. I want five.
How many more do I need?"

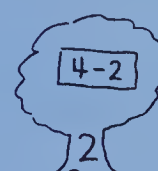


"Three,
four,
five."

"Now I have five. How many
did I add?" *Three.*

"Good. 2 plus 3 gave me 5."

2. Provide a game of matching subtraction names to their appropriate numbers, e.g., putting apples on the right tree.



3. Have students draw cartoons to model subtraction names, then describe their pictures to the class.



"Four cars are at the light."



"Three cars go through but one is left."

$$4 - 3 = \blacksquare$$

Enrichment

1. Provide a worksheet of addition and subtraction questions where the signs are missing. Ask the students to find the sign for each example.

$$2 \bigcirc 3 = 5$$

$$4 \bigcirc 1 = 3$$

2. Play "Hidden Eggs" as suggested in the Ideas section of the introduction to this unit.

Extra Practice

Worksheet A17

Pages 75-76

Subtract.

$$5 - 4 = \boxed{1}$$





$$3 - 2 = \boxed{1}$$





$$1 - 1 = \boxed{0}$$





$$\begin{array}{r} 4 \\ - 3 \\ \hline 1 \end{array}$$


$$\begin{array}{r} 5 \\ - 2 \\ \hline 3 \end{array}$$


$$\begin{array}{r} 2 \\ - 1 \\ \hline 1 \end{array}$$


$$\begin{array}{r} 2 \\ - 0 \\ \hline 2 \end{array}$$


$$\begin{array}{r} 5 \\ - 5 \\ \hline 0 \end{array}$$


$$\begin{array}{r} 4 \\ - 2 \\ \hline 2 \end{array}$$


Objective M2

Subtract and solve problems involving pennies.

Vocabulary

Cents, pennies, cost, price, spend, buy, pay

Direction words: How many pennies are left?

Materials

Pennies*
Old toys

Introducing the Lesson

Let one student be the storekeeper. Provide the others with pennies. Have a variety of old toys for costs up to 5¢. To begin, you can give directions:

"You have five cents."

"You want to buy the boat."

"How much is the boat, Billy? (storekeeper) *One cent.*

"Show how much you would have to pay for the boat."



"How much do you have left?"

Four cents.

"Good 5 subtract 1 equals 4." Let the students take turns going up to the storekeeper, buying something and then telling about it. *I had four cents. I paid two cents for the book. Now I have two cents and a book.*

Teaching the Lesson

Use the chalkboard to show how to cross out money spent.



Five cents, spend two cents; three cents left.

Practise recording some of the store transactions using the chalkboard.

"Bill, how many pennies did you have?" *Five.*



"How many did you spend?" *Three.*



"How many are left?" *Two.*



$$5 - 3 = 2$$



		$5¢ - 4¢ = \boxed{1}¢$
		$5¢ - 2¢ = \boxed{3}¢$
		$5¢ - 1¢ = \boxed{4}¢$
		$5¢ - 3¢ = \boxed{2}¢$
		$5¢ - \boxed{4}¢ = \boxed{1}¢$
		$5¢ - \boxed{5}¢ = \boxed{0}¢$
		$5¢ - \boxed{3}¢ = \boxed{2}¢$

Subtract pennies; problem solving

seventy-seven 77

Using the Pages

- Page 77 requires crossing out pennies to show the cost of the object, then recording how many pennies are left.
- Page 78 involves gradually translating problem situations to subtraction number sentences. This page can be done as a directed lesson with less able children emphasizing:
 - How many pennies do you have to start with?
 - How much do you have to pay for the toy?
 - How much is left?

Subtract. How many pennies are left?

$$5¢ - 3¢ = \boxed{2}¢$$

$$4¢ \quad 5¢ - 4¢ = \boxed{1}¢$$

$$2¢ \quad 8¢ - 2¢ = \boxed{6}¢$$

$$3¢ \quad 4¢ - 3¢ = \boxed{1}¢$$

$$2¢ \quad 6¢ - \boxed{2}¢ = \boxed{4}¢$$

$$2¢ \quad 10¢ - \boxed{2}¢ = \boxed{8}¢$$

$$\boxed{7}¢ - \boxed{2}¢ = \boxed{5}¢$$

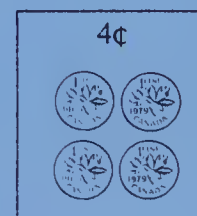
$$\boxed{5}¢ - \boxed{1}¢ = \boxed{4}¢$$

$$\boxed{4}¢ - \boxed{4}¢ = \boxed{0}¢$$

$$\boxed{5}¢ - \boxed{5}¢ = \boxed{0}¢$$

Reinforcement

1. Provide a supply of cards, marked with 1¢ to 5¢, and pennies (or use coin stamps) for students to make the corresponding sets.



2. Set up any type of actual buy-sell situation you can that will provide a real-life experience with pennies and purchasing. One possibility is a used comic book sale. Or, simply use the play store from the lesson with pretend exchanges of money and objects.

This lesson only deals with pennies. More able students may wish to work with nickels or dimes as well. (These coins are introduced later in the program.)

Enrichment

For students who are familiar with coins other than pennies, provide examples of nickels, dimes and quarters. Students can draw equivalent sets of pennies for each coin.



Extra Practice

Worksheet M2

Pages 77-78

Subtract. How many pennies are left?

$5¢ - 5¢ = \boxed{0}¢$	$6¢ - 3¢ = \boxed{3}¢$
$\boxed{5}¢ - \boxed{2}¢ = \boxed{3}¢$	$\boxed{6}¢ - \boxed{4}¢ = \boxed{2}¢$

Problem Solving Activities

Assign Level 1, Unit 4

UNIT 4 LESSON 10

Objective A18

Recognize subtraction names for numbers 1 to 10.

Vocabulary

Subtraction names

Direction words: Deliver the letters.

Materials

Bingo chips*

Placemats



Subtraction Name Cards for 0, -1, and -2

Introducing the Lesson

Give each student ten bingo chips and a placemat. Tell them to:

“Start with six.”



“Subtract two.”

(Put two at one side.)



“How many are left?”

“Six subtract two equals ...?” *Four.*

“Six subtract two is another name for ...?” *Four.*

Repeat using the Subtraction Name Cards in place of oral directions. Read the cards with the students first. Show $5 - 1$. Read “Start with ...?” *Five.* “Subtract ...?” *One.* “How many left?” Show it on your mat.”

Teaching the Lesson

On the chalkboard review these solution procedures.

a.
$$\begin{array}{r} 0\ 0\ 0\ 0\ 0\ 0\ 0\ 0 \\ 0\ 0\ 0\ 0\ 8 \\ 0\ 0\ 0\ 0\ -1 \\ \hline \end{array}$$
 $8 - 1 = \blacksquare$

The students are to interpret the illustration and record the remaining subset.

b.
$$\begin{array}{r} 0\ 0\ 0\ 0\ 0\ 0\ 0\ 0 \\ 0\ 0\ 0\ 0\ 6 \\ 0\ 0\ 0\ 0\ -2 \\ \hline \end{array}$$
 $6 - 2 = \blacksquare$

The students should cross out two, and record 4.

c. $4 - 1 = \blacksquare$ or
$$\begin{array}{r} 4 \\ -1 \\ \hline \end{array}$$

The students should draw four, cross out one, and record 3.

Deliver the letters.



Names for numbers 0 to 10

seventy-nine 79

Using the Page

- For page 79, provide the students with placemats, counters, and a pencil. Do a few examples showing them how to model the name, $6 - 2$ with counters, then draw a line to match $6 - 2$ with the house marked, four. Encourage them to print the numerals for each word before completing the page. Reading is not essential to the page as the houses are in order from nine down to one.
- Many students may prefer to complete the page by counting back in their heads rather than by modelling the subtraction. Be positive about such efforts, but insist on their using materials to correct any errors to ensure that they have a reliable solution procedure to fall back on.

Subtract.

$$\begin{array}{r} 7 \text{ ☆☆☆☆} \\ - 1 \text{ ☆☆☆} \\ \hline 6 \end{array}$$

$$\begin{array}{r} 5 \text{ ☆☆☆} \\ - 2 \text{ ☆☆☆} \\ \hline 3 \end{array}$$

$$\begin{array}{r} 3 \text{ ☆☆☆} \\ - 0 \text{ ☆☆☆} \\ \hline 3 \end{array}$$

Subtract.

$$6 - 2 = \boxed{4}$$

$$9 - 1 = \boxed{8}$$

$$2 - 2 = \boxed{0}$$

Draw. Subtract.

$$4 - 2 = \boxed{2}$$

$$5 - 4 = \boxed{1}$$

$$2 - 0 = \boxed{2}$$

Cross out. Subtract.

$$3\text{¢} - 2\text{¢} = \boxed{1}\text{¢}$$

$$4\text{¢} - 1\text{¢} = \boxed{3}\text{¢}$$

$$5\text{¢} - 2\text{¢} = \boxed{3}\text{¢}$$

Count back.

$$\boxed{10} \boxed{9} \boxed{8} \boxed{7} \boxed{6} \boxed{5} \boxed{4} \boxed{3} \boxed{2} \boxed{1} \boxed{0}$$

Subtract.

$$\begin{array}{r} 5 \\ - 3 \\ \hline 2 \end{array}$$

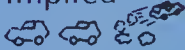
$$\begin{array}{r} 4 \\ - 1 \\ \hline 3 \end{array}$$



$$\begin{array}{r} 5 \\ - 0 \\ \hline 5 \end{array}$$

Informal Assessment

1. Subtraction Concepts

- Using counters, show the pupil a set, separate a subset, then ask the child to describe what you did. Can he or she—recall or identify the starting set?—describe the subtraction as take away, minus, or subtract?—tell how many are left?—tell you how many there will be if the two subsets are joined again? Without counting?

- Show an illustration of implied action subtraction as in  Ask the same questions as in section a to ensure the student can interpret the illustration meaningfully.

- Using a set-subset illustration,  and a crossout model,  repeat the procedure of a.

2. Subtraction Skills

Provide a variety of counters, a place-mat, a pencil, and paper. Ask the student to solve several subtraction questions using any method he or she chooses.

- Does the student rely on counters, fingers, draw a picture, or just think the answers?
- Does the student use a counting procedure to subtract $7 - 3$ such as:
 - Build 7; count off 3; count up the remaining objects: 1, 2, 3, 4.
 - Build 7; count backwards removing a set of 3: 7, 6, 5, 4.
 There are many varieties. These are just two examples.

3. Vocabulary for Subtraction

Have the child read subtraction number sentences aloud. Note the language used. Try both horizontal and vertical forms. Ask if the child can read the sentence using other words.

4. Counting Skills

- Can the child count backwards from 10 to 0?
- Can the child tell you how many are left after one is removed from sets of various sizes (without having to count up the remaining set)? For example: "I have 10 candies." (Take 1) "Now how many do I have?" Nine.

UNIT 4

TEST

- Solve vertical subtraction given an illustration.
- Solve horizontal subtraction by crossing out in the illustration.
- Draw a model to solve a subtraction sentence.
- Subtract pennies given an illustration.
- Count back from ten to zero by ones.
- Solve subtraction sentences given "action" models.

UNIT 5

Addition and Subtraction to 7

Theme: Winter

Lesson		Objective	Pages
1	A19	Add to sums of 5.	81-82
2	A20	Add to sums of 6.	83-84
3	A21	Add to sums of 7.	85-86
4	A22	Add to sums of 5, 6, and 7.	87-88
5	PS1	Interpret and solve picture problems.	89-90
6	A23	Subtract from numbers up to 5.	91-92
7	A24	Subtract from numbers up to 6.	93-94
8	A25	Subtract from numbers up to 7.	95-96
9	A26	Subtract from 5, 6, and 7.	97-98
10	PS2	Interpret and solve subtraction picture problems.	99
Test		Addition and subtraction to sums of 7	100

Vocabulary

add
equals
addition number sentence
changing order
greater
greater than
count on
plus
sum
take away
subtraction number sentence
subtraction name
whole

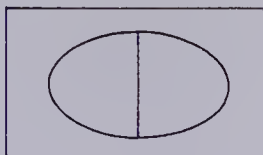
separate
plus
addition name
balance
less
less than
add on
in all
subtract
minus
count back
part
more

Printed Directions:

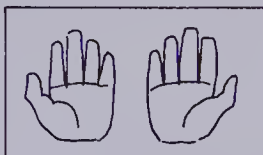
Colour patterns for 6.

Materials

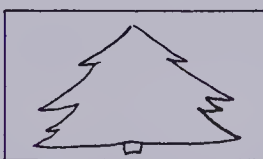
Placemats for teacher and each student:



Hands placemats:



Christmas tree mats:



Numeral Cards for teacher (T) pupils* (P) $\boxed{0}$ to $\boxed{10}$

Dot Pattern Cards

—geometric* and scattered (See introduction to Unit 1)

Addition Name Cards to 7. $\boxed{3 + 3}$

Subtraction Name Cards with minuends to 7. $\boxed{7 - 4}$

Wall number line to 50

Floor number line to 10

Before and After cards



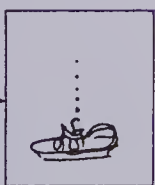
front



back



front



back

feltboard
beans
bingo chips*
paper plates
crayons
macaroni
stars
chart paper
interlocking cubes

felt cutouts
blocks
boxes
paper bag
scissors
stickers
dice
graph paper
old magazines

About This Unit

Unit 5 deals with addition and subtraction to sums of seven. Units 3 and 4 developed addition and subtraction concepts and the association of these concepts with concrete or pictorial models and symbolic number sentences. Unit 5 works from this conceptual base toward familiarity with addition and subtraction facts or names for numbers to 7.

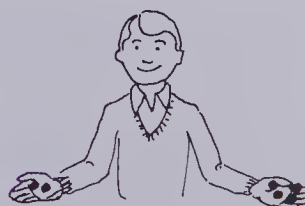
Prerequisites

On pages 60 and 80 of the Teacher's Guide you will find suggestions for informally assessing students' addition and subtraction concepts and skills. This information, in conjunction with the students' performance on the pupils' tests for Units 3 and 4, should indicate which pupils:

1. are not ready to proceed with more abstract work; (Children who are not able to translate number sentences into concrete or pictorial models and vice versa will need more work with concrete materials, oral problem solving, and how to record the operations.)
2. are ready to proceed with Unit 5, but will require concrete materials or counting models as aids; (These should be readily available for those who need them.)
3. are already recalling sums and differences without the need for counting methods and concrete or pictorial models. (Enrichment and extension activities should be provided for these children.)

Addition and Subtraction Concepts

An understanding of the commutative property of addition will be absorbed intuitively from lessons involving the manipulation of materials and exercises necessitating counting on from the greater addend.



Two and four,
six in all.

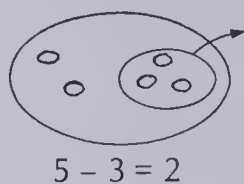
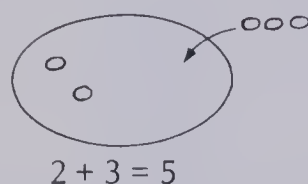
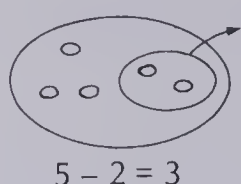
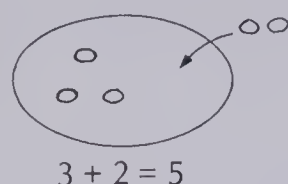


Four and two,
six in all.

The inverse relationship of addition and subtraction also develops intuitively through doing

*Available in Houghton Mifflin K-2 Activity Kit

and undoing activities and names for number activities that feature related numbers (e.g., 2, 3, 5).



Pupil's book exercises do not combine addition and subtraction in the same lessons. Instead, 1 to 5 teach addition, and 6 to 10 teach subtraction. Mixed operations are introduced later in the program.

Counting

The *Introducing the Lesson* sections continue to work on oral counting skills, such as counting forward and back by ones, counting on and counting back with objects. Oral work with grouping and counting groups and leftovers is introduced as preparation for place value and multiple patterns.

The ability to recognize small groups (two to five objects) without counting is fostered in preparation for more efficient and mature counting strategies for simplifying counting, such as counting on from a recognized group and grouping elements.

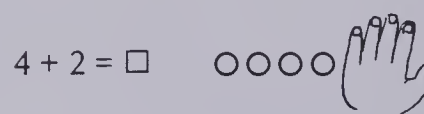
Familiarity with printed, two-digit numerals is developed by following oral counting on a number line. Any opportunity to read numerals aloud with the students will help to reinforce the left-to-right pattern. The teens often provide a stumbling block due to the misleading nomenclature we use (e.g., seventeen for 17) so care needs to be taken with the numbers from 10 to 20 for both reading and writing, to ensure that the order of the digits is correct. Provide a number line or hundred chart and wall reference charts for the numbers from 0 to 20 for self-checking. The place value of tens and ones is thoroughly developed in Unit 9, but familiarity with these numerals ahead of time is a valuable readiness skill.

The Use of Models

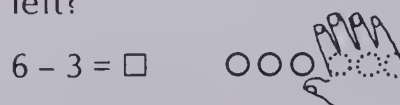
Unit 5 introduces a new model for use with addition and subtraction, while continuing to use the familiar models from Units 3 and 4. Often at the top of a page the exercise illustrates or draws a model, while the exercises at the bottom of the page involve straightforward practice without illustrations. Most exercises are designed for use by all pupils; more challenging exercises are usually found on the second page of a lesson; the teacher's instructions for *Using the Pages* indicate the difficulty level of these exercises.

Several pages, particularly the subtraction pages, provide a counting or partitioning model at the top of the page. These illustrations are provided for optional use. Many students will prefer to use counters. Students need to be shown how to use these models correctly; follow the directions in the *Using the Pages* section.

"Show four to start. Move your hand to show two more. Count on to 6."

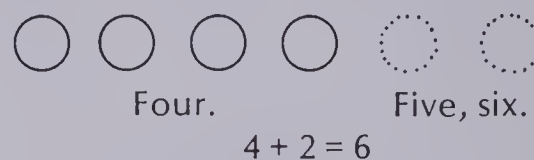


"Show six to start. Cover three. How many left?"



The counting model reinforces set-subset relationships and the reversibility of addition and subtraction.

Unit 5 continues to develop the ability to count on as a means of finding sums and as a way of visualizing or mentally representing a given quantity, as in the following model.



Activity Centre

Organize a Shapes and Patterns Centre. This centre will be important since the ability to recognize and work with patterns is an essential part of mathematics and problem solving. In the initial stages of working with patterns young children should work with real objects

and pictures to become aware of patterns and to learn to recognize, describe, copy, analyse, extend, and create them.

Introductory Activities

These centre activities combine introductory pattern work with visual-motor activities related to tracing, copying, and drawing basic shapes, and with visual spatial activities, such as recognizing orientation differences in patterns and manipulating shapes (first concretely, then mentally) to fit a given pattern or shape.

As an introduction to the centre activities, give the students an opportunity to become familiar with the materials and to practise making some basic shapes for copying their patterns.

1. Provide templates (cut from plastic lids) to practise drawing shapes such as:



2. Provide acetate-covered cards for tracing patterns, such as a star pattern.



3. Provide dot-to-dot stencils of various shapes.
4. Provide practice sheets for copying and for drawing from memory.
5. Provide geometric solids for tracing around the faces.

Materials

Collect as many of the following materials as possible. Provide a separate container for each set of materials.

1. Pattern Blocks

—coloured wooden blocks



—pattern block tracers



—pattern block stickers or paper replicas for pasting into patterns



—cards of patterns for modelling with the blocks

2. Unifix, Multilink, or Wooden Cubes

—pattern cards for modelling



—graph paper for colouring patterns

3. Number Rods or Strips (Cuisenaire Rods)

—graph paper



4. Beads

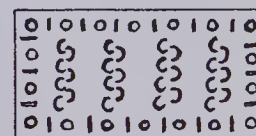
—wood or plastic in a variety of colours, sizes, and shapes



5. Macaroni

—a variety of types (elbow, pinwheel, etc.)

—pieces can be spray-painted or dyed



6. Attribute Blocks

—coloured wood or plastic blocks

—big and little shapes



—tracers



—paper replicas for copying block patterns

7. Tangrams

—rubber, plastic, or cardboard sets

—Tangram pattern cards

8. Miscellaneous Objects


—keys, shells, buttons, crayons

9. Dried Beans

—lima, peas, kidney, etc.

Activities

Some or all of the following suggestions can be used with each type of material. One possibility is to assign one task each day for the students to try with the material of their choice.

1. Have each student make a replica of a given arrangement, e.g., . Next, have them join the separate pattern units to

make a continuous pattern.



Separate the pattern into pattern units to ensure that the students recognize the repetitious aspects of the pattern.

- Have the students build a pattern and tell about it.
- Provide a pattern for the students to copy.
- Have them extend the pattern. What comes next?
- Ask them to translate a pattern into words, sounds, or actions.



White, red, white, red, white, red,....

Snap, clap, snap, clap,....

Stand, sit, stand, sit,....

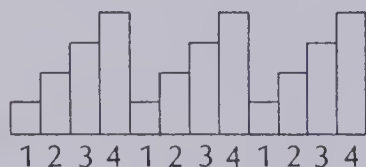
- Ask them to translate patterns into number sequences using loud-soft counting to begin.



1, 2, 3, 4, 5, 6,

7, 8, 9...

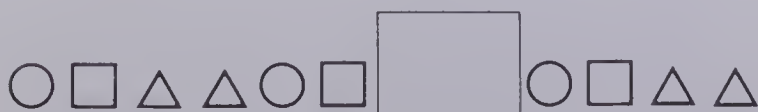
- Have them record patterns using symbols.



- Have them build a pattern, trace it, and colour it; or ask them to build a pattern from templates.



- Direct the students to build a pattern, then draw a copy of it, or colour a copy on graph paper. If stickers or paper strips are available, they could be glued on paper for a permanent record.
- Have the students work in groups to predict what comes next in someone else's pattern.
- Have them guess which part of a pattern is covered. Lift to check.



- Vary the attributes used: shape, orientation of shapes, size, colour. Discuss patterns around the room, and around us in general: patterns in clothing and fabrics; patterns in buildings; patterns in objects, e.g., windows, garage doors, man-hole covers; patterns in nature, e.g., leaf patterns, spiral patterns in cones, and so on.

Collect examples or copies of these patterns. Try art activities that focus on patterning, e.g., weaving (using paper or wool), stitchery, vegetable prints, rubbings of patterns and textures.

Ideas

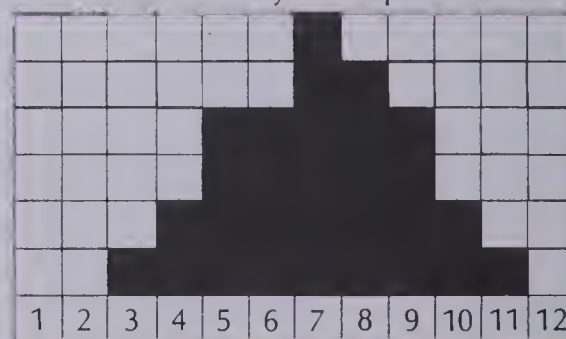
- Graphing

Develop graphs from the following:

- the number of patterned and plain shirts, sweaters, or coats worn;
- favourite shapes or patterns;
- dice rolls.

Each day for one week, have each student roll two dice, count the number of dots showing, and colour a square on the graph to show the number of dots in all. Discuss patterns formed on the graph after a few days.

Monday's Graph



Total dots rolled

- Games

- Bingo variations

3	6	1	7	1
0	3	0	2	6
4	0	▲	1	2
3	4	4	5	7
7	5	2	6	5

Since Unit 5 emphasizes sums to seven, have the students fill 5 by 5 bingo grid cards with the numerals from 0 to 7 until each of the squares has a numeral in it. (By making one basic bingo grid stencil and running it off on construction paper,

the children can fill in their own cards to suit the purposes of a particular unit.) Use the cards with beans or chips for these bingo variations.

Addition or Subtraction Facts Game: Students take turns calling an addition (or subtraction) combination as the others use a counter to cover the sum (or difference) where it appears on their card. Check the answers for each example before the next combination is given.

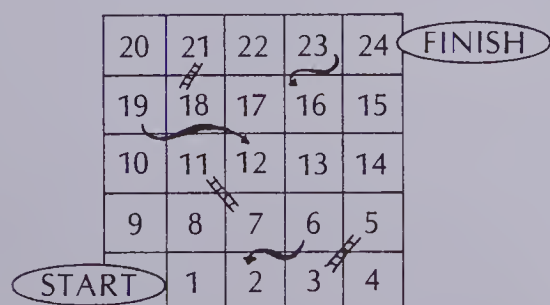
Addition Name Game: Call a number from 4 to 7. The students are to cover a name for that number, e.g., if 7 is called out, the student responds 5 and 2, 6 and 1, 3 and 4, or 7 and 0. Only one pair can be covered for each number given. For the first few rounds have the students tell what they covered.

One More, One Less Game: Students take turns calling a number as the others cover one more and/or one less than the number (specify which rule before each new game). Check which numbers can be covered after each example and before the next number is called.





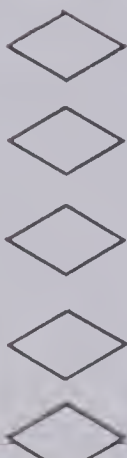



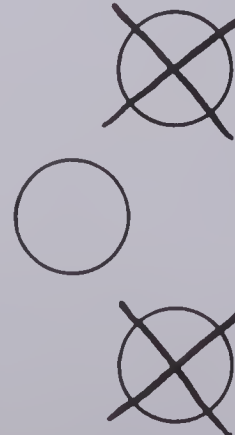
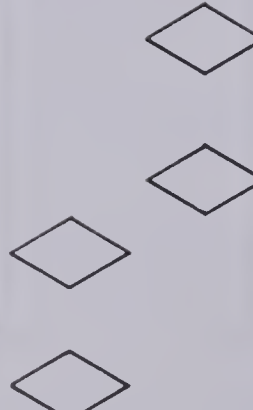

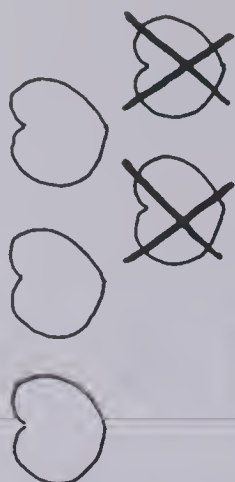


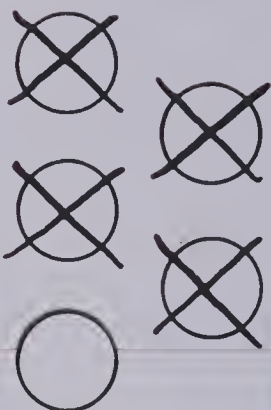
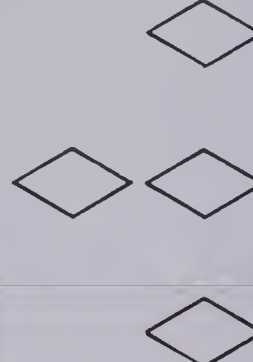
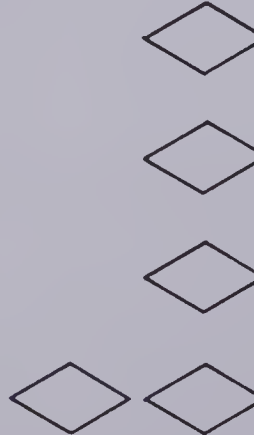
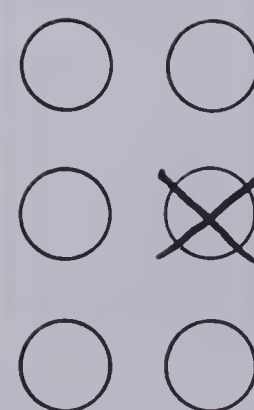



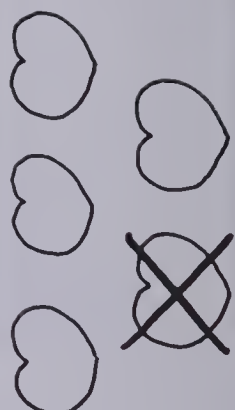
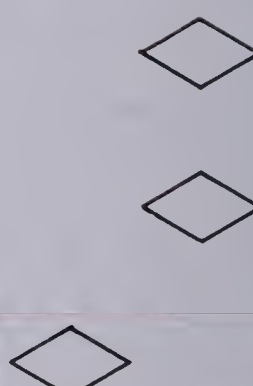
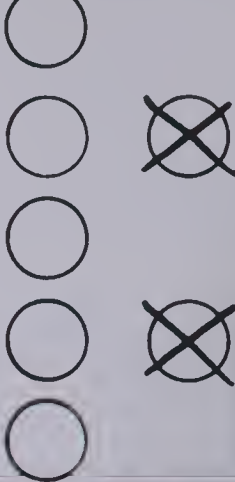
Find the Difference Game: Label two dice, one 0 to 5, the other 2 to 7. Have one student roll both dice and choose the greater number as the minuend and the lesser as the subtrahend to make a subtraction combination. The rest of the class must find and cover the square on their bingo card showing the difference.

b. "Snakes and Ladders"

Provide a deck of cards with addition and/or subtraction combinations to 7, and markers for up to four players. Each player takes a card, adds or subtracts, and moves his or her marker the number of the answer. Other players check the answers.



Addition and Subtraction Picture Cards

Name _____

Pretest

Unit 5

Add.

$$\begin{array}{r} 4 \\ + 2 \\ \hline 6 \end{array}$$

$$\begin{array}{r} 3 \\ + 4 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 2 \\ + 5 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 1 \\ + 4 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 3 \\ + 3 \\ \hline 6 \end{array}$$

$$6 + 1 = \boxed{7} \quad 0 + 5 = \boxed{5} \quad 2 + 4 = \boxed{6}$$

Subtract.

$$\begin{array}{r} 7 \\ - 1 \\ \hline 6 \end{array}$$

$$\begin{array}{r} 6 \\ - 5 \\ \hline 1 \end{array}$$

$$\begin{array}{r} 5 \\ - 3 \\ \hline 2 \end{array}$$

$$\begin{array}{r} 7 \\ - 4 \\ \hline 3 \end{array}$$

$$\begin{array}{r} 6 \\ - 3 \\ \hline 3 \end{array}$$

$$5 - 2 = \boxed{3} \quad 6 - 1 = \boxed{5} \quad 7 - 5 = \boxed{2}$$

Add.



$$\boxed{4} + \boxed{3} = \boxed{7}$$



$$\boxed{2} + \boxed{5} = \boxed{7}$$

Subtract.



$$\boxed{6} - \boxed{2} = \boxed{4}$$



$$\boxed{7} - \boxed{3} = \boxed{4}$$

Name _____

Post-test

Unit 5

Add.

$$\begin{array}{r} 5 \\ + 1 \\ \hline 6 \end{array}$$

$$\begin{array}{r} 3 \\ + 4 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 2 \\ + 2 \\ \hline 4 \end{array}$$

$$\begin{array}{r} 5 \\ + 2 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 0 \\ + 7 \\ \hline 7 \end{array}$$

$$3 + 2 = \boxed{5} \quad 6 + 1 = \boxed{7} \quad 4 + 2 = \boxed{6}$$

Subtract.

$$\begin{array}{r} 6 \\ - 5 \\ \hline 1 \end{array}$$

$$\begin{array}{r} 7 \\ - 2 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 4 \\ - 3 \\ \hline 1 \end{array}$$

$$\begin{array}{r} 6 \\ - 2 \\ \hline 4 \end{array}$$

$$\begin{array}{r} 7 \\ - 4 \\ \hline 3 \end{array}$$

$$5 - 4 = \boxed{1} \quad 7 - 3 = \boxed{4} \quad 6 - 1 = \boxed{5}$$

Add.



$$\boxed{4} + \boxed{1} = \boxed{5}$$



$$\boxed{3} + \boxed{4} = \boxed{7}$$

Subtract.



$$\boxed{6} - \boxed{1} = \boxed{5}$$



$$\boxed{7} - \boxed{2} = \boxed{5}$$

UNIT 5 LESSON 1


Objective A19

Add to sums of 5.

Vocabulary

Add, plus, equals, addition name, addition number sentence

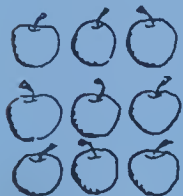
Materials

Dot Pattern Cards (geometric)*
Feltboard
Felt cutouts
T Numeral Cards
Placemats 
Beans

Introducing the Lesson

Flash the Dot Pattern Cards quickly and have the students say how many are pictured.

Place groups of from six to twelve felt cutouts on a feltboard. Have the students find recognizable subsets within the larger set.



I see three and three and three. I see nine in all.

Teaching the Lesson

Review adding one, two, or zero using T Numeral Cards and the following oral directions.

Show **5**. "Add on two."

Five, six, seven. Five plus two equals seven.

With placemats and beans, say addition names like "four plus one". Ask the children to model the name on their placemats.



Have them read the addition sentence. *Four plus one is five in all. Four plus one is a name for five.*

Ask the students to come up individually to the chalkboard and finish drawing the models of addition sentences with sums to 5.

Draw. Add.

$$\begin{array}{r} 2 \text{ } \circ \circ \\ + 3 \text{ } \circ \circ \circ \\ \hline 5 \end{array}$$

$$\begin{array}{r} 4 \text{ } \circ \circ \circ \circ \\ + 0 \\ \hline 4 \end{array}$$

$$\begin{array}{r} 1 \text{ } \circ \\ + 4 \text{ } \circ \circ \circ \circ \\ \hline 5 \end{array}$$

$$\begin{array}{r} 2 \text{ } \circ \circ \\ + 2 \text{ } \circ \circ \\ \hline 4 \end{array}$$

$$\begin{array}{r} 3 \text{ } \circ \circ \circ \\ + 1 \text{ } \circ \\ \hline 4 \end{array}$$

$$\begin{array}{r} 1 \text{ } \circ \\ + 2 \text{ } \circ \circ \\ \hline 3 \end{array}$$



Add.

$$\begin{array}{r} 4 \\ + 1 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 5 \\ + 0 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 3 \\ + 2 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 1 \\ + 3 \\ \hline 4 \end{array}$$

$$\begin{array}{r} 0 \\ + 2 \\ \hline 2 \end{array}$$

$$\begin{array}{r} 3 \\ + 0 \\ \hline 3 \end{array}$$

$$\begin{array}{r} 2 \\ + 3 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 2 \\ + 1 \\ \hline 3 \end{array}$$

$$\begin{array}{r} 1 \\ + 4 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 4 \\ + 0 \\ \hline 4 \end{array}$$

$$\begin{array}{r} 0 \\ + 4 \\ \hline 4 \end{array}$$

$$\begin{array}{r} 2 \\ + 2 \\ \hline 4 \end{array}$$

$$\begin{array}{r} 2 \\ + 0 \\ \hline 2 \end{array}$$

$$\begin{array}{r} 0 \\ + 5 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 1 \\ + 1 \\ \hline 2 \end{array}$$




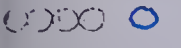
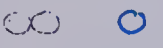




Sums to 5

eighty-one 81

Using the Pages

- At the top of page 81, review the direction words "Draw" and "Add". At the bottom of the page encourage the students to start with one number and count on for the other. Provide counters for those who require them, or encourage them to draw dots to help solve the problems.
- At the top of page 82, direct the students to finish drawing the model of the addition name and to record the sum. The activity at the bottom of page 82 is similar to that on page 81 except that the addition sentences are horizontal.


Draw. Add.

 $3 + 2 = \boxed{5}$	 $1 + 4 = \boxed{5}$	 $2 + 3 = \boxed{5}$
 $4 + 1 = \boxed{5}$	 $2 + 1 = \boxed{3}$	 $0 + 5 = \boxed{5}$
 $2 + 2 = \boxed{4}$	 $3 + 0 = \boxed{3}$	 $1 + 2 = \boxed{3}$

Add.

$5 + 0 = \boxed{5}$	$3 + 1 = \boxed{4}$
$2 + 3 = \boxed{5}$	$0 + 1 = \boxed{1}$
$1 + 1 = \boxed{2}$	$4 + 0 = \boxed{4}$
$0 + 3 = \boxed{3}$	$1 + 3 = \boxed{4}$
$2 + 0 = \boxed{2}$	$3 + 2 = \boxed{5}$
$4 + 1 = \boxed{5}$	$0 + 4 = \boxed{4}$
$2 + 2 = \boxed{4}$	$1 + 0 = \boxed{1}$

Reinforcement

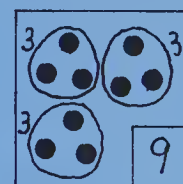
1. Give each student counters and a placemat . Direct the class to use the counters to find three different names for each number. Have them record these names in the following format using a worksheet or the chalkboard.

__ + __ = 3
__ + __ = 3
__ + __ = 3

__ + __ = 4
__ + __ = 4
__ + __ = 4

__ + __ = 5
__ + __ = 5
__ + __ = 5

2. For children having difficulty seeing sub-groups within large groups, provide a stencil of arrays with from 6 to 10 objects. Ask the students then to circle and label identifiable groups. Have these groupings read aloud to you to check comprehension.



Three and three and three.
There are 9 dots in all.










Enrichment

This unit's theme is *Winter*. Depending on how advanced the season is when you get to this unit, you may choose to graph one of the following.

1. The weather for a week (temperature, sunshine, precipitation, etc.).
2. The colours of the children's mittens, hats, scarves, and so on.

Extra Practice

Draw. Add.

 $2 + 2 = \square$	 $0 + 3 = \square$	 $4 + 1 = \square$
 $3 + 2 = \square$	 $1 + 3 = \square$	 $2 + 0 = \square$
 $2 + 1 = \square$	 $0 + 5 = \square$	 $2 + 3 = \square$

Worksheet A19

Pages 81-82

UNIT 5 LESSON 2


Objective A20

Add to sums of 6.

Vocabulary

Changing order, balance, equal, greater, less, greater than, less than
Direction words: Colour patterns for 6.

Materials

- Hands placemats 
- Bingo chips*
- Feltboard
- Felt cutouts
- T Numeral Cards
- Coloured blocks

Introducing the Lesson

Pass out hands placemats and bingo chips. Review building two groups, counting how many in all, and then changing the order of the addends and recounting – to reinforce intuitive understanding of the commutative property of addition.

Teaching the Lesson

Repeat the activity of the Introduction with your own and with the students' hands.

Practise balancing sets. Show one set of felt cutouts on a feltboard. Show also a subset of that set and ask a student to make it equal to the first set.



Show two T Numeral Cards. Ask the students to point to the number that is greater, or less. Read the cards using the appropriate relationship.




"Which is greater?" *Nine.*
 "Nine is greater than four."
 "Which is less?" *Four.*
 "Four is less than nine."


Draw four stars on the chalkboard. Show the students how to use a drawing to help them solve incomplete number sentences.





$4 + 2 = \square$ "Start with 4. Add 2. How many in all?" *Four, five, six.*


Add.


$$\begin{array}{r} 4 \\ + 2 \\ \hline 6 \end{array}$$


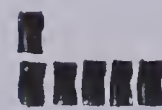
$$\begin{array}{r} 3 \\ + 1 \\ \hline 4 \end{array}$$



$$\begin{array}{r} 2 \\ + 3 \\ \hline 5 \end{array}$$


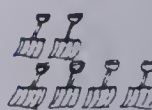
$$\begin{array}{r} 3 \\ + 3 \\ \hline 6 \end{array}$$


$$\begin{array}{r} 0 \\ + 5 \\ \hline 5 \end{array}$$


$$\begin{array}{r} 1 \\ + 4 \\ \hline 5 \end{array}$$


$$\begin{array}{r} 1 \\ + 5 \\ \hline 6 \end{array}$$


$$\begin{array}{r} 3 \\ + 2 \\ \hline 5 \end{array}$$


$$\begin{array}{r} 2 \\ + 4 \\ \hline 6 \end{array}$$


Add.

$$\begin{array}{r} 4 \\ + 0 \\ \hline 4 \end{array}$$

$$\begin{array}{r} 5 \\ + 1 \\ \hline 6 \end{array}$$

$$\begin{array}{r} 2 \\ + 2 \\ \hline 4 \end{array}$$

$$\begin{array}{r} 6 \\ + 0 \\ \hline 6 \end{array}$$

$$\begin{array}{r} 4 \\ + 2 \\ \hline 6 \end{array}$$

$$\begin{array}{r} 1 \\ + 3 \\ \hline 4 \end{array}$$

$$\begin{array}{r} 2 \\ + 0 \\ \hline 2 \end{array}$$

$$\begin{array}{r} 3 \\ + 3 \\ \hline 6 \end{array}$$

$$\begin{array}{r} 4 \\ + 1 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 1 \\ + 5 \\ \hline 6 \end{array}$$

$$\begin{array}{r} 2 \\ + 1 \\ \hline 3 \end{array}$$

$$\begin{array}{r} 2 \\ + 4 \\ \hline 6 \end{array}$$

$$\begin{array}{r} 3 \\ + 2 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 1 \\ + 2 \\ \hline 3 \end{array}$$

$$\begin{array}{r} 5 \\ + 0 \\ \hline 5 \end{array}$$



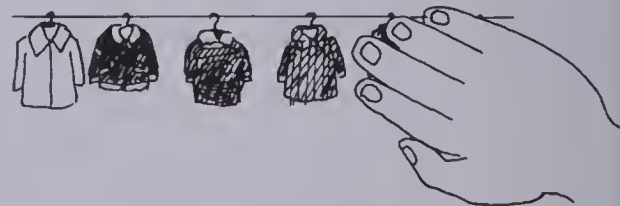
Sums to 6

eighty-three 83

Using the Pages

- Page 83 reviews sums to 6 with and without illustrations. Provide counters for those who need them.
- At the top of page 84, refer to the coats. Encourage the students to use these to help solve the number sentences. They can cover up coats and then add on as needed.

$$4 + 2 = \square$$



At the bottom of page 84, use a chalkboard example with two colours of chalk to introduce colouring patterns for six. The students are to colour two subsets then record their patterns in a number sentence.



Add.

$$4 + 2 = \boxed{6} \quad 3 + 3 = \boxed{6} \quad 3 + 1 = \boxed{4}$$

$$3 + 2 = \boxed{5} \quad 5 + 1 = \boxed{6} \quad 2 + 4 = \boxed{6}$$

$$6 + 0 = \boxed{6} \quad 1 + 4 = \boxed{5} \quad 2 + 2 = \boxed{4}$$

$$4 + 1 = \boxed{5} \quad 0 + 5 = \boxed{5} \quad 1 + 5 = \boxed{6}$$

Colour patterns for 6.



$$\boxed{1} + \boxed{5} = 6$$



$$\boxed{2} + \boxed{4} = 6$$

Answers might include:



$$\boxed{3} + \boxed{3} = 6$$



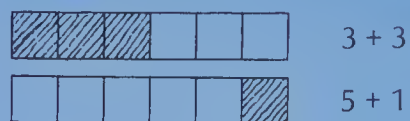
$$\boxed{4} + \boxed{2} = 6$$



$$\boxed{5} + \boxed{1} = 6$$

Reinforcement

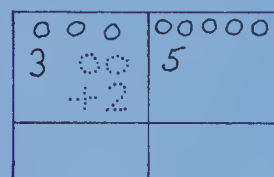
1. Have the students choose six blocks in two colours. On the chalkboard record addition names for six based on the patterns they have made.



2. Write a name for six. Have the students model it with the coloured blocks.



3. Provide each student with a piece of paper. Have them fold it in eight sections. In the upper two sections ask them to draw three balls on one side and five balls on the other. Have them write the numeral for how many in each group. Ask them to balance the groups or to make both of them equal by drawing more balls on one side. Help the students to record how many they added.



4. Write several addition sentences on the chalkboard with sums to 4, 5, and 6. Include among these some *incorrect* sums.

$$\begin{aligned} 3 + 2 &= 5 \\ 1 + 2 &= 4 \\ 3 + 3 &= 6 \\ 3 + 1 &= 4 \\ 1 + 4 &= 6 \end{aligned}$$

Ask for someone to come up to the board and check an example by drawing a model.

Then they may mark it right or wrong.

$$3 + 2 = 5 \quad \checkmark \quad 1 + 2 = 4 \quad \times$$

Enrichment

Ask the students to make a six train from blocks that join and then colour that pattern onto graph paper. Have them use the coloured patterns to generate "long" names for 6.

$$2 + 2 + 2 = 6$$



Extra Practice

Add.

$\begin{array}{r} 3 \\ + 1 \\ \hline 4 \end{array}$	$\begin{array}{r} 4 \\ + 2 \\ \hline 6 \end{array}$	$\begin{array}{r} 6 \\ + 0 \\ \hline 6 \end{array}$	$\begin{array}{r} 3 \\ + 2 \\ \hline 5 \end{array}$	$\begin{array}{r} 1 \\ + 4 \\ \hline 5 \end{array}$
$\begin{array}{r} 5 \\ + 0 \\ \hline 5 \end{array}$	$\begin{array}{r} 3 \\ + 3 \\ \hline 6 \end{array}$	$\begin{array}{r} 1 \\ + 5 \\ \hline 6 \end{array}$	$\begin{array}{r} 2 \\ + 2 \\ \hline 4 \end{array}$	$\begin{array}{r} 2 \\ + 4 \\ \hline 6 \end{array}$
$\begin{array}{r} 5 \\ + 1 \\ \hline 6 \end{array}$	$\begin{array}{r} 0 \\ + 4 \\ \hline 4 \end{array}$	$\begin{array}{r} 2 \\ + 1 \\ \hline 3 \end{array}$	$\begin{array}{r} 0 \\ + 6 \\ \hline 6 \end{array}$	$\begin{array}{r} 4 \\ + 1 \\ \hline 5 \end{array}$

Worksheet A20

Pages 83-84

UNIT 5 LESSON 3

Objective A21

Add to sums of 7.

Vocabulary

Count on, add on, greater, lesser, plus, in all

Materials

Paper bag
Blocks
Number line to 50
T Numeral Cards

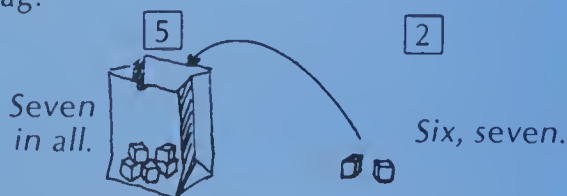
Introducing the Lesson

Play an imaginary counting game using a paper bag and blocks. "I have sixteen blocks in the bag." Add one. "Now how many?" Have the students count aloud as blocks are added. Use numbers as high as the majority are familiar with. Especially reinforce the bridges to next decades (19-20, 49-50).

Practise counting on from a given number with a number line. "Start with twelve. Add two more, count on two." *Twelve, ... thirteen, fourteen.* "Twelve plus two more gives us fourteen." Have the students come up and give similar directions to the class. *Start with.... Add on....*

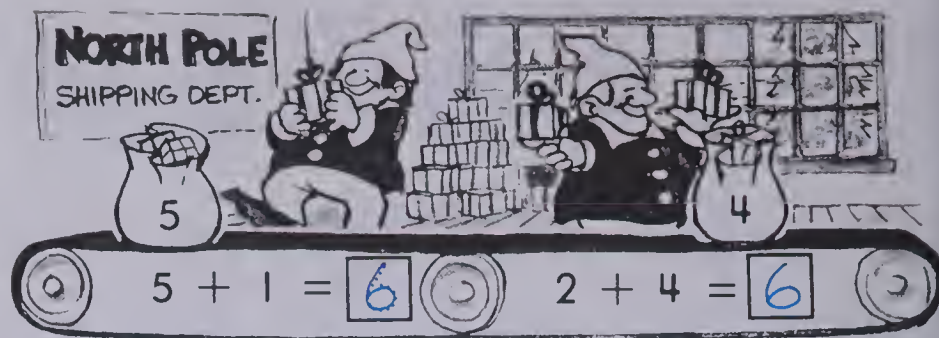
Teaching the Lesson

Pass out two T Numeral Cards and ask the students with the cards to show you that number of blocks. Ask the others which set is greater. Put the greater set in a paper bag; then count on as you put the lesser set into the bag.



Write an addition name on the chalkboard. Ask which addend (or number) is greater. Draw a bag around it.

"Start with six, and add one. How many in all?"
"Six and one more equals seven in all."
 $6 + 1 = 7$
 $1 + 6 = 7$



$$\begin{array}{ccc} \text{4} & \text{3} & \text{5} \\ 4 + 3 = 7 & 3 + 2 = 5 & 1 + 5 = 6 \end{array}$$

$$\begin{array}{ccc} \text{6} & \text{5} & \text{7} \\ 1 + 6 = 7 & 5 + 2 = 7 & 0 + 7 = 7 \end{array}$$

Add.

$$\begin{array}{ccc} \text{6} & \text{5} & \text{5} \\ 6 + 1 = 7 & 0 + 5 = 5 & 2 + 5 = 7 \end{array}$$

$$\begin{array}{ccc} \text{4} & \text{4} & \text{4} \\ 4 + 2 = 6 & 3 + 4 = 7 & 4 + 1 = 5 \end{array}$$

$$\begin{array}{ccc} \text{4} & \text{3} & \text{6} \\ 1 + 4 = 5 & 2 + 3 = 5 & 0 + 6 = 6 \end{array}$$

$$\begin{array}{ccc} \text{7} & \text{5} & \text{3} \\ 7 + 0 = 7 & 5 + 2 = 7 & 3 + 3 = 6 \end{array}$$

Sums to 7

eighty-five 85

Using the Pages

- Discuss the picture at the top of page 85. Point out that the elves start with some gifts already in the sack and add more. Do the examples with the students. For the bottom of page 85, explain that the greater number is in the sack and they must add in the other number. Provide counters (and bags) for students who need them. For the last two rows, students can put the sack around the greater number, or simply complete the number sentences.
- Page 86 provides practice with vertical addition sentences to sums of seven. Seven reindeer are provided for counting reference. You may want to encourage the students to identify the starting addend as on page 85.

$$\begin{array}{r} \text{5} \\ +2 \\ \hline \end{array}$$



Add.

$\begin{array}{r} 5 \\ + 2 \\ \hline 7 \end{array}$	$\begin{array}{r} 4 \\ + 1 \\ \hline 5 \end{array}$	$\begin{array}{r} 6 \\ + 0 \\ \hline 6 \end{array}$	$\begin{array}{r} 3 \\ + 2 \\ \hline 5 \end{array}$	$\begin{array}{r} 1 \\ + 6 \\ \hline 7 \end{array}$
$\begin{array}{r} 3 \\ + 4 \\ \hline 7 \end{array}$	$\begin{array}{r} 6 \\ + 1 \\ \hline 7 \end{array}$	$\begin{array}{r} 2 \\ + 4 \\ \hline 6 \end{array}$	$\begin{array}{r} 5 \\ + 0 \\ \hline 5 \end{array}$	$\begin{array}{r} 0 \\ + 7 \\ \hline 7 \end{array}$
$\begin{array}{r} 4 \\ + 2 \\ \hline 6 \end{array}$	$\begin{array}{r} 7 \\ + 0 \\ \hline 7 \end{array}$	$\begin{array}{r} 1 \\ + 5 \\ \hline 6 \end{array}$	$\begin{array}{r} 0 \\ + 6 \\ \hline 6 \end{array}$	$\begin{array}{r} 2 \\ + 5 \\ \hline 7 \end{array}$
$\begin{array}{r} 2 \\ + 3 \\ \hline 5 \end{array}$	$\begin{array}{r} 5 \\ + 1 \\ \hline 6 \end{array}$	$\begin{array}{r} 2 \\ + 2 \\ \hline 4 \end{array}$	$\begin{array}{r} 4 \\ + 3 \\ \hline 7 \end{array}$	$\begin{array}{r} 1 \\ + 3 \\ \hline 4 \end{array}$
$\begin{array}{r} 3 \\ + 3 \\ \hline 6 \end{array}$	$\begin{array}{r} 0 \\ + 5 \\ \hline 5 \end{array}$	$\begin{array}{r} 1 \\ + 4 \\ \hline 5 \end{array}$	$\begin{array}{r} 5 \\ + 2 \\ \hline 7 \end{array}$	$\begin{array}{r} 3 \\ + 4 \\ \hline 7 \end{array}$

Reinforcement

1. To date, the students have learned to print the numerals to 10, but should be able to count aloud considerably beyond 10. Provide opportunities for them to associate numerals greater than 10 with the counting sequence. For example, have them copy numerals from a number line or from pages in a book, in order, from 1 to 30 (or beyond).

2. To encourage students to count on, try using sets of objects and Numeral Cards in the following way. Build two sets such as •• and ••••. Ask which is greater and how many are in that pile. Cover the pile with a numeral card, then ask the student to count on to find how many in all. Have the student then record an addition sentence for the model.

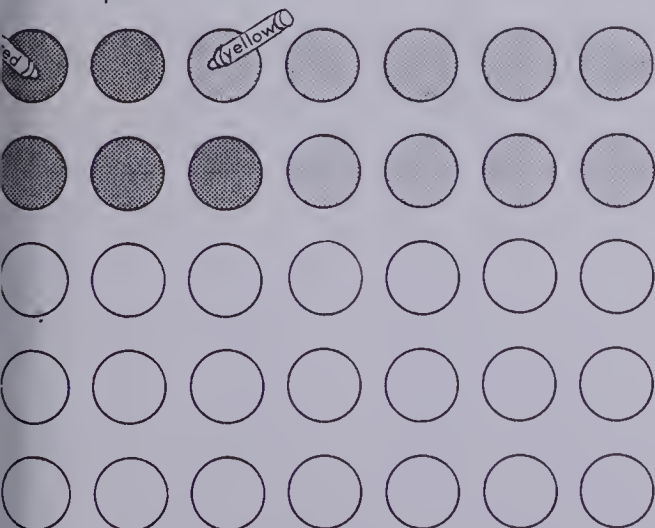
$$\begin{array}{c} \bullet\bullet \quad \boxed{6} \\ 2 + 6 = \boxed{8} \end{array}$$

Enrichment

Have the students try to print from 1 to 50 from memory.

Extra Practice

Colour patterns for 7.



$$\boxed{2} + \boxed{5} = 7$$

$$\boxed{3} + \boxed{4} = 7$$

$$\boxed{4} + \boxed{3} = 7$$

$$\boxed{5} + \boxed{2} = 7$$

$$\boxed{6} + \boxed{1} = 7$$

Worksheet A21

Pages 85-86

UNIT 5 LESSON 4


Objective A22

Add to sums of 5, 6, and 7.

Vocabulary

Addition names, sum, plus, equals

Materials

Placemats 
 Bingo chips*
 Addition Name Cards
 Boxes
 Crayons

Introducing the Lesson

Have the students model and describe addition names for 5 (then 6 and 7) on placemats with bingo chips.

One plus four.



Five plus zero.



Record these on the chalkboard as the students call them. Then read the list of addition names as they move their bingo chips to show them.


5
1 + 4
3 + 2
5 + 0
4 + 1


Teaching the Lesson

Using Addition Name Cards for 5, 6, and 7 and boxes labelled 5, 6, and 7, give each student a chance to turn up an addition name card and put it in the corresponding box. $2 + 4$ Two plus four is an addition name for six. 6 Other students can model the addition name with counters as each name is read.


The ability of the students to recall sums will vary greatly. No pressure should be put on less competent or confident students to respond quickly at this stage. However, hearing others quickly provide sums may help the rest to recall basic combinations.


Draw. Add.



 $4 + 3 = 7$



 $1 + 5 = 6$






 $5 + 2 = 7$


 $2 + 4 = 6$


 $4 + 1 = 5$


 $3 + 4 = 7$


 $1 + 4 = 5$


 $0 + 5 = 5$

Add.

$5 + 1 = 6$

$2 + 3 = 5$

$4 + 2 = 6$

$3 + 2 = 5$

$1 + 6 = 7$

$7 + 0 = 7$

$5 + 0 = 5$

$3 + 3 = 6$

$6 + 1 = 7$

$2 + 5 = 7$

$0 + 6 = 6$

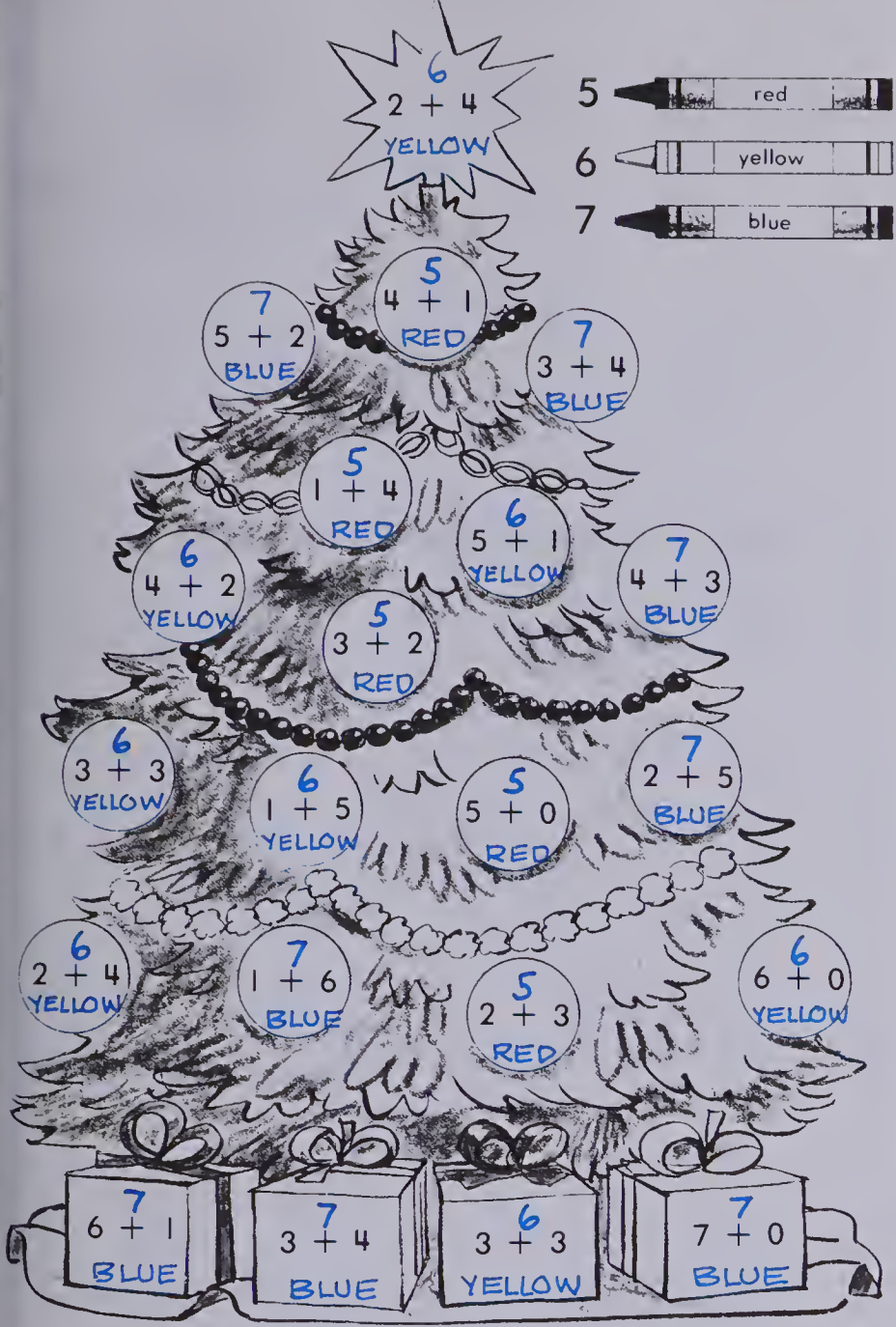
$4 + 3 = 7$

Addition facts to 7

eighty-seven 87

Using the Pages

- The top of page 87 involves adding on to the greater addend. Use chalkboard examples to demonstrate drawing onto the given illustration.
- Page 88 requires crayons. The students are to colour the addition names according to the sums. Provide counters if necessary.



88 eighty-eight Names for numbers 5, 6, and 7

Reinforcement

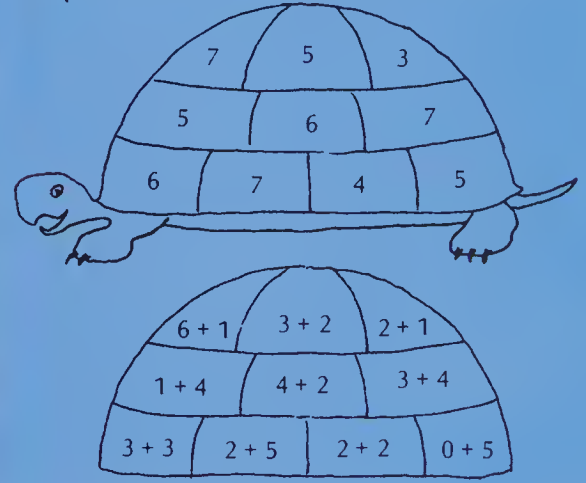
1. Using counters and mats, orally practise finding how many more. "Start with five. How many more to get seven?" Five, six, seven. Two more. "Five plus two more equals seven."

2. Mix the Addition Name Cards for 5, 6, and 7. Show the cards one at a time, allowing time for the students to call out the sums. Show $5 + 2$, pause, and then say, "Five plus two equals..."

3. Provide two-colour, dried, lima beans. (Spray paint or mark one side of each bean). Have the students choose five, six, or seven beans and record the number they have at the top of a piece of paper. Then ask them to shake the beans, separate them into two piles according to the colour of the side facing up, and record a list of addition names for that number.

6	
2 + 4	● ● ○ ○ ○ ○
5 + 1	● ● ● ● ● ○

4. Provide a worksheet of the following puzzle. Ask the students to cut out the addition names and paste them on the turtle's back, matching names and shapes.



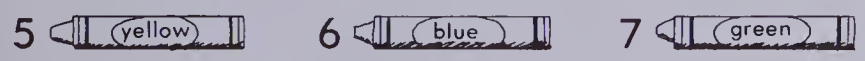
Enrichment

Prepare and display a list of the first names of the pupils in the class. For each name, have the students record in an addition sentence the number of vowels and consonants and the total number of letters.

Charlie 3 vowels
3 + 4 = 7 4 consonants

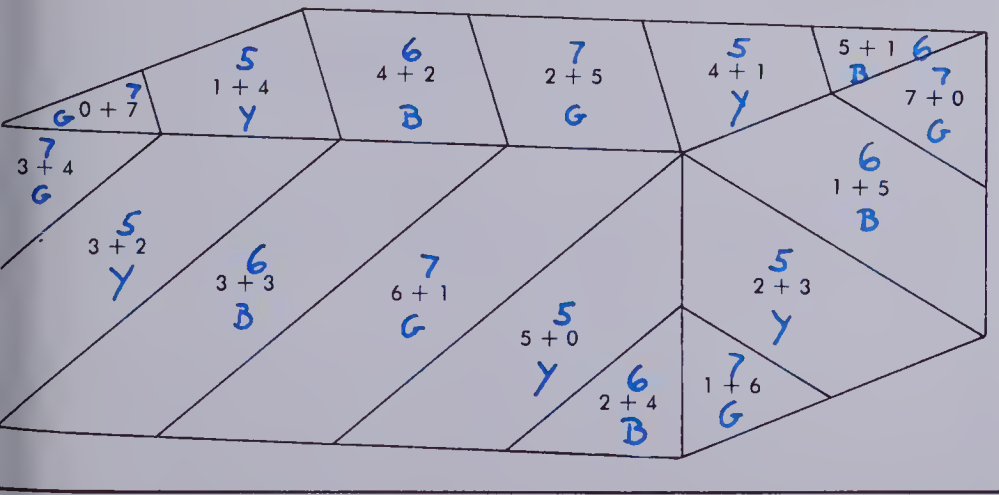
Extra Practice

Add. Colour.



Worksheet A22

Pages 87-88



Objective PS1

Interpret and solve addition picture problems.

Vocabulary

Addition number sentence

Materials

Christmas tree placemats

Decorations: macaroni, stickers, stars

Felt Christmas tree

Felt decorations

Crayons

Introducing the Lesson

Provide each student with a piece of paper, a Christmas tree placemat, and a variety of decorations. They are to model and solve both action/joining and set/subset problem situations regarding what goes on the tree.

a. action/joining situation

"John put four Christmas balls on the tree. Anna put two stars on the tree. How many decorations are on the tree now?" *Six decorations in all.*



b. set/subset situation

"The tree has three red bells and two blue bells on it. How many bells are on the tree altogether?"

Teaching the Lesson

Act out decorating situations using a felt or a real Christmas tree. Tell the students how to describe the situation. "First you put five white balls on the tree, then two red balls. Now there are seven balls in all on the tree." Record the number sentence for each situation.

$$5 + 2 = 7$$



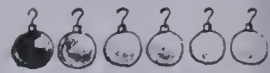
Provide the students with paper and pencil. Act out more decorating situations and have the students write a number sentence to describe each addition situation.



$$3 + 2 = 5$$



$$4 + 3 = 7$$



$$1 + 5 = 6$$



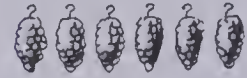
$$2 + 4 = 6$$



$$4 + 0 = 4$$



$$5 + 2 = 7$$



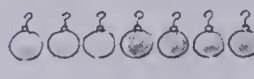
$$3 + 3 = 6$$



$$6 + 1 = 7$$



$$2 + 3 = 5$$



$$3 + 4 = 7$$



$$1 + 4 = 5$$



$$4 + 2 = 6$$



$$2 + 5 = 7$$



$$1 + 6 = 7$$



$$3 + 3 = 6$$



$$5 + 2 = 7$$

Addition sentences for sums to 7; problem solving

eighty-nine 89

Using the Pages

- The lesson reviews vocabulary and translates real-life addition situations into mathematical number sentences (and vice versa). The workbook pages follow up the manipulative activity using illustrations and encourage drawing as a means of solving addition problems.
- Page 89 involves translating picture problems to number sentences. Frames ($\square + \square = \square$) are provided to help the students write the number sentence.
- Page 90 asks the students to draw a model of a problem as a means of helping them to visualize and solve it. No number sentence is required at this stage.

2 red ☆

3 yellow ☆

5 ☆ in all

4 green ○

2 blue ○

6 ○ in all

5 red ○

2 blue ○

7 ○ in all

4 white ♯

3 red ♯

7 ♯ in all

3 green ☆

3 blue ☆

6 ☆ in all

1 yellow ○

4 red ○

5 ○ in all

2 red ♯

4 yellow ♯

6 ♯ in all

6 yellow ☆

1 blue ☆

7 ☆ in all

Reinforcement

1. Write eight open addition sentences (with sums to 7) on the chalkboard. Give each student a piece of paper and demonstrate how to fold it in eight. Ask the students to write down each example on the paper, draw a picture of it, and then complete the number sentence.

5 + 1 = ____ □□□□□ □	3 + 4 = ____ □□□ □□□□
1 + 6 = ____	3 + 3 = ____
4 + 2 = ____	3 + 2 = ____
5 + 2 = ____	2 + 2 = ____

2. Provide blocks that join for students to build two-colour trains of a specific length. Then they are to match the trains to cards showing names of that number.



Enrichment

Provide old magazines. Direct the students to find, cut out, and paste pictures showing addition situations. They are to print the addition number sentence that matches their picture and then bring it to you for a written description. Display these word problems.



$$3 + 2 = 5$$

3 girls and 2 boys are playing.
There are 5 children in all.

Extra Practice

Worksheet PS1

Pages 89-90

3 red ♥
4 blue ♥

7 ♥ in all

5 green ○
1 blue ○

6 ○ in all

2 red ☆
3 yellow ☆

5 ☆ in all

4 blue ✨
2 yellow ✨

6 ✨ in all

Objective A23

Subtract from numbers up to 5.

Vocabulary

Subtract, take away, minus, subtraction name, subtraction number sentence, count back, whole, part

Materials

Beans

Number line to 20

Placemats 

Subtraction Name Cards

Introducing the Lesson

Provide students with eight to twelve beans. Tell them to separate their beans into two, three, four, or more equal groups. Focus on the vocabulary of grouping, on seeing groups of the same size, and on identifying left-overs. For example, show nine beans. Arrange them in groups of three. "How many groups of three can you make with nine counters altogether?" *Three groups of three.*

Teaching the Lesson

Practise oral counting back with a number line and quiet-loud counting. "Start at 10. Count back 2." *Ten, nine, Eight.* "Start at 7. Count back 3." *Seven, six, Five, four.*

Using placemats and beans, review building sets and separating into two subsets. "Start with six beans. Put two on one side. How many are on the other side?" *Four.*

Have the students model an open subtraction sentence with beans on their placemats in order to solve or complete the sentence.

$$5 - 4 \rightarrow \begin{array}{|c|} \hline \bullet \bullet \bullet \bullet \bullet \\ \hline \end{array} \rightarrow \begin{array}{|c|} \hline \bullet \bullet \bullet \bullet \bullet \\ \hline \end{array}$$

On the chalkboard, review drawing a model to solve. Have the students take turns making cross-out models at the board as Subtraction Name Cards are shown.

$$\boxed{4 - 2} \quad 0 \quad 0 \quad \times \quad \times$$

Subtract.

$$\begin{array}{r} 5 \\ - 3 \\ \hline 2 \end{array} \quad \begin{array}{r} 3 \\ - 1 \\ \hline 2 \end{array}$$

$$\begin{array}{r} 4 \\ - 2 \\ \hline 2 \end{array} \quad \begin{array}{r} 5 \\ - 4 \\ \hline 1 \end{array}$$

$$\begin{array}{r} 4 \\ - 1 \\ \hline 3 \end{array} \quad \begin{array}{r} 3 \\ - 2 \\ \hline 1 \end{array}$$

$$\begin{array}{r} 5 \\ - 5 \\ \hline 0 \end{array} \quad \begin{array}{r} 4 \\ - 3 \\ \hline 1 \end{array}$$



$$\begin{array}{r} 5 \\ - 1 \\ \hline 4 \end{array} \quad \begin{array}{r} 4 \\ - 0 \\ \hline 4 \end{array}$$

Subtract.

$$\begin{array}{r} 2 \\ - 1 \\ \hline 1 \end{array} \quad \begin{array}{r} 5 \\ - 4 \\ \hline 1 \end{array} \quad \begin{array}{r} 3 \\ - 3 \\ \hline 0 \end{array} \quad \begin{array}{r} 5 \\ - 3 \\ \hline 2 \end{array} \quad \begin{array}{r} 2 \\ - 2 \\ \hline 0 \end{array}$$

$$\begin{array}{r} 5 \\ - 0 \\ \hline 5 \end{array} \quad \begin{array}{r} 4 \\ - 3 \\ \hline 1 \end{array} \quad \begin{array}{r} 2 \\ - 0 \\ \hline 2 \end{array} \quad \begin{array}{r} 4 \\ - 2 \\ \hline 2 \end{array} \quad \begin{array}{r} 5 \\ - 2 \\ \hline 3 \end{array}$$

Subtraction facts to 5

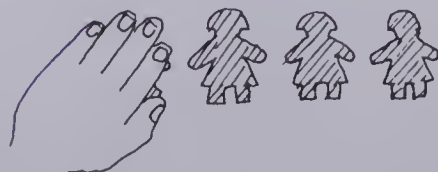
ninety-one 91

Using the Pages

- At the top of page 91, the students are to cross out to subtract. At the bottom of page 91, they may draw a model or simply subtract.
- On page 92, the students are given an illustration of the starting set from which to subtract. Encourage them to identify what is to be subtracted by covering that subset while recording the remaining subset.



$$4 - 1 = \square$$



$$4 - 1 = \square$$



$$5 - 3 = \boxed{2} \quad 5 - 5 = \boxed{0} \quad 5 - 1 = \boxed{4}$$

$$5 - 4 = \boxed{1} \quad 5 - 2 = \boxed{3} \quad 5 - 0 = \boxed{5}$$



$$3 - 2 = \boxed{1} \quad 3 - 0 = \boxed{3}$$

$$3 - 3 = \boxed{0} \quad 3 - 1 = \boxed{2}$$



$$4 - 2 = \boxed{2} \quad 4 - 0 = \boxed{4} \quad 4 - 3 = \boxed{1}$$

$$4 - 1 = \boxed{3} \quad 4 - 4 = \boxed{0}$$

Reinforcement

1. For further practice in counting back, place a number line (to at least 20) on the floor. On small pieces of paper write instructions for going back.

Go back
2

Go back
1

Go back
3

Have one student select a piece of paper and read the instruction. Another waits on the number line at 20 and walks out the instruction. The rest of the children try to predict where the walker will stop. Repeat the procedure with other students. Vary the starting number.

2. Bring a group of nine to twelve students to the front of the room. Ask another of the students to arrange these boys and girls in groups of a particular number. Direct another student to say how many groups there are and how many left over (if any). Repeat, with other students taking turns.

Enrichment

Play a name-guessing game. Each child writes and keeps to himself an addition or subtraction name for 0 to 5, such as $6 - 2$, then gives oral clues to the others. "I'm thinking of a subtraction name for four." *Five minus one.* "No." *Four minus zero.* "No." The student who correctly guesses "Six minus two," goes next or chooses who goes next.

Extra Practice

Cross out. Subtract.

$$\begin{array}{r} 5 \triangle \triangle \\ - 3 \triangle \triangle \\ \hline 2 \triangle \triangle \end{array}$$

$$\begin{array}{r} 4 \triangle \triangle \\ - 2 \triangle \triangle \\ \hline 2 \triangle \triangle \end{array}$$

$$\begin{array}{r} 3 \triangle \triangle \\ - 1 \triangle \triangle \\ \hline 2 \triangle \triangle \end{array}$$

$$\begin{array}{r} 4 \triangle \triangle \\ - 1 \triangle \triangle \\ \hline 3 \triangle \triangle \end{array}$$

$$\begin{array}{r} 2 \triangle \triangle \\ - 2 \triangle \triangle \\ \hline 0 \triangle \triangle \end{array}$$

$$\begin{array}{r} 5 \triangle \triangle \\ - 4 \triangle \triangle \\ \hline 1 \triangle \triangle \end{array}$$

$$\begin{array}{r} 5 \triangle \triangle \\ - 1 \triangle \triangle \\ \hline 4 \triangle \triangle \end{array}$$

$$\begin{array}{r} 4 \triangle \triangle \\ - 4 \triangle \triangle \\ \hline 0 \triangle \triangle \end{array}$$

$$\begin{array}{r} 5 \triangle \triangle \\ - 0 \triangle \triangle \\ \hline 5 \triangle \triangle \end{array}$$

$$\begin{array}{r} 2 \triangle \triangle \\ - 1 \triangle \triangle \\ \hline 1 \triangle \triangle \end{array}$$

$$\begin{array}{r} 5 \triangle \triangle \\ - 2 \triangle \triangle \\ \hline 3 \triangle \triangle \end{array}$$

$$\begin{array}{r} 3 \triangle \triangle \\ - 1 \triangle \triangle \\ \hline 2 \triangle \triangle \end{array}$$

Worksheet A23

Pages 91-92

Objective A24

Subtract from numbers up to 6.

Vocabulary

Separate, subtract, more, less, subtraction number sentence

Materials

Number line to 50

Christmas tree placemats

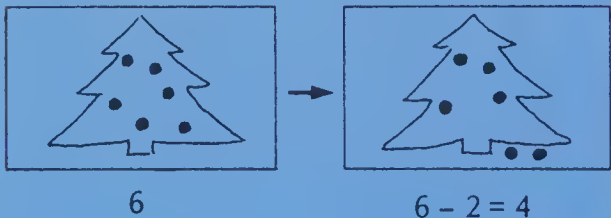
Decorations: macaroni

Introducing the Lesson

Practise reading numbers in counting sequence with a number line to 50. Have the students choose where to start by calling out or pointing to a number. The others find that number and count on until the first student claps to stop the counting.

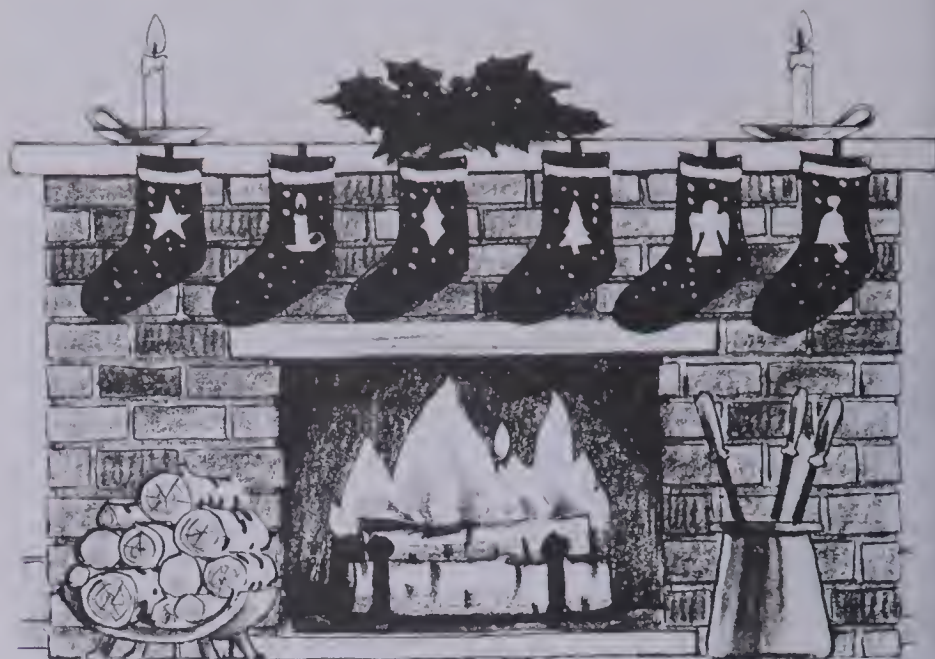
Teaching the Lesson

Using Christmas tree placemats and macaroni as decoration, tell the students to decorate the tree. "Put six green decorations on the tree. Two decorations fall off onto the floor. How many decorations are left on the tree?"



Try the inverse: "Put back the two that fell. Now how many are on the tree?" $4 + 2 = 6$ Students can write or say the corresponding number sentence.

Give each student an opportunity to show a subtraction problem using their hands and some macaroni. Have someone take four, five, or six macaroni pieces to start, shake them, and separate them into both hands. "There are six in all. I have two pieces in this hand. How many are left in this other hand? Mary?" *Four.* (Open hands.) "You are right, so it's your turn."



Subtract.

$$\begin{array}{r} 6 \\ - 2 \\ \hline 4 \end{array}$$

$$\begin{array}{r} 5 \\ - 1 \\ \hline 4 \end{array}$$

$$\begin{array}{r} 4 \\ - 2 \\ \hline 2 \end{array}$$

$$\begin{array}{r} 6 \\ - 5 \\ \hline 1 \end{array}$$

$$\begin{array}{r} 5 \\ - 4 \\ \hline 1 \end{array}$$

$$\begin{array}{r} 5 \\ - 3 \\ \hline 2 \end{array}$$

$$\begin{array}{r} 6 \\ - 6 \\ \hline 0 \end{array}$$

$$\begin{array}{r} 6 \\ - 1 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 5 \\ - 0 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 5 \\ - 5 \\ \hline 0 \end{array}$$

$$\begin{array}{r} 6 \\ - 4 \\ \hline 2 \end{array}$$

$$\begin{array}{r} 5 \\ - 2 \\ \hline 3 \end{array}$$

$$\begin{array}{r} 6 \\ - 3 \\ \hline 3 \end{array}$$

$$\begin{array}{r} 4 \\ - 3 \\ \hline 1 \end{array}$$

$$\begin{array}{r} 6 \\ - 0 \\ \hline 6 \end{array}$$

Subtraction facts to 6

ninety-three 93

Using the Pages

- To prepare the students for page 93, show a chalkboard example to show them how to use an illustrated series of objects to help them subtract. Draw nine or ten stars. Write $6 - 2$. Have a student identify the starting set (six stars), cover up two, and record the remaining number of stars. Emphasize that they must start with the correct number each time. (There are six stockings on page 93 for use in counting, but the examples include minuends of 6, 5, and 4.)
- On page 94, the students must shade the lights to show which have burnt out. $6 - 2 = \square$ "There are six lights to start, two burn out (so they are shaded black), and four are left." The exercise at the bottom of page 94 involves matching number sentences to the string of lights that illustrates that sentence.

Colour. Subtract.



$$6 - 2 = \boxed{4}$$



$$4 - 1 = \boxed{3}$$



$$5 - 3 = \boxed{2}$$



$$5 - 1 = \boxed{4}$$



$$6 - 4 = \boxed{2}$$



$$4 - 2 = \boxed{2}$$



$$6 - 5 = \boxed{1}$$



$$5 - 0 = \boxed{5}$$



$$6 - 3 = \boxed{3}$$



$$5 - 4 = \boxed{1}$$



$$6 - 6 = \boxed{0}$$



$$4 - 3 = \boxed{1}$$

Subtract. Match.

$$5 - 2 = \boxed{3}$$

$$6 - 4 = \boxed{2}$$

$$4 - 2 = \boxed{2}$$

$$5 - 4 = \boxed{1}$$

$$6 - 3 = \boxed{3}$$

$$6 - 2 = \boxed{4}$$



94 ninety-four

Subtraction facts to 6

Reinforcement

1. Have the students show with macaroni how to model a subtraction sentence by covering a subset.

Six in all. Six subtract four equals two.



Repeat, using pictures of objects drawn on the chalkboard.



Five in all. Five subtract one equals four.

2. Choose two students to come up and take one handful of macaroni. Have them count their handfuls to determine who has more. Line the macaroni up in one-to-one correspondence to determine how many more.



Peter has two more than Ann.



Ann has two less than Peter.

3. Give oral directions for drawing a model using the workbook's string of lights idea. For example: "Draw six lights. Two burn out; colour them black. How many are still burning?" Write a number sentence to describe your picture.

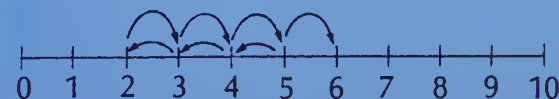


$$6 - 2 = 4$$

Use subtraction examples with minuends of four, five, and six.

Enrichment

Play a plus-minus game using counters, graph paper, and pencils. Ask the students to draw a line and number it from 0 to 10. Starting with their counters at 5, call out directions for moving. "Minus three." "Plus four." The students move with each direction and record what has happened in a number sentence.



"Minus three." $5 - 3 = 2$
 "Plus four." $2 + 4 = 6$

Extra Practice

Worksheet A24

Pages 93-94

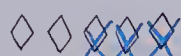
Cross out. Subtract.



$$4 - 2 = \boxed{2}$$



$$6 - 1 = \boxed{5}$$



$$5 - 3 = \boxed{2}$$



$$6 - 4 = \boxed{2}$$



$$5 - 1 = \boxed{4}$$



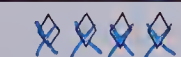
$$6 - 3 = \boxed{3}$$



$$5 - 2 = \boxed{3}$$



$$6 - 3 = \boxed{3}$$



$$4 - 4 = \boxed{0}$$



$$6 - 6 = \boxed{0}$$



$$6 - 0 = \boxed{6}$$



$$6 - 5 = \boxed{1}$$

UNIT 5 LESSON 8


Objective A25

Subtract from numbers up to 7.

Vocabulary

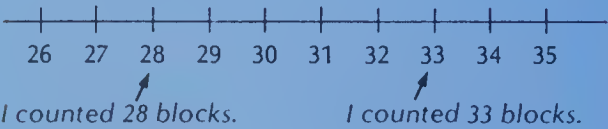
More, less, subtract, take away, minus

Materials

Blocks
Number line to 50
Placemats 
Bingo chips*
Die
Scissors

Introducing the Lesson

Practise oral counting with blocks. Move each block into a pile as it is counted. Make several piles of more than 20 blocks. Choose two students to count the separate piles. When they have counted their piles, ask them to point out how many they counted using the number line. Discuss who has more.

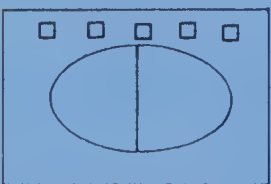


Lynn has more blocks because 33 is more than 28.

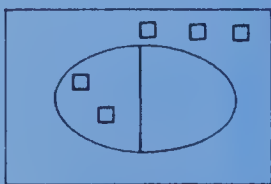
Teaching the Lesson

Provide the students with placemats and blocks. Direct them to model subtraction examples. Start with five blocks for facts of 5, then do the facts of 6 and 7.

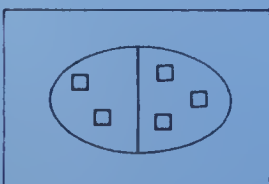
Start with five.



Subtract two.



Five subtract two equals three.



$$7 - 1 = \boxed{6}$$

$$7 - 5 = \boxed{2}$$

$$7 - 2 = \boxed{5}$$

$$7 - 3 = \boxed{4}$$

$$7 - 4 = \boxed{3}$$

$$7 - 6 = \boxed{1}$$

$$7 - 0 = \boxed{7}$$

$$7 - 7 = \boxed{0}$$



Subtract.

$$\begin{array}{r} 7 \\ - 2 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 7 \\ - 5 \\ \hline 2 \end{array}$$

$$\begin{array}{r} 7 \\ - 4 \\ \hline 3 \end{array}$$

$$\begin{array}{r} 7 \\ - 0 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 7 \\ - 6 \\ \hline 1 \end{array}$$

$$\begin{array}{r} 7 \\ - 1 \\ \hline 6 \end{array}$$

$$\begin{array}{r} 7 \\ - 3 \\ \hline 4 \end{array}$$

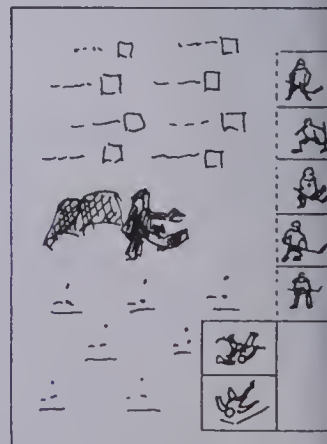
$$\begin{array}{r} 7 \\ - 7 \\ \hline 0 \end{array}$$

Subtraction facts to 7



Using the Pages

- Page 95 has pictures to help solve subtraction questions. The students must first fold along the dotted line, unfold, then cut along each of the solid lines on the right side of the page. The skaters can be folded over to show which skaters have fallen. For example: $7 - 2 = \square$. "Seven children are playing hockey. Two children fall down. How many are still skating?"
- Page 96 reviews facts to 7.



Subtract.



$$\begin{array}{r} 7 \\ - 2 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 6 \\ - 3 \\ \hline 3 \end{array}$$

$$\begin{array}{r} 7 \\ - 4 \\ \hline 3 \end{array}$$

$$\begin{array}{r} 5 \\ - 0 \\ \hline 5 \end{array}$$



$$\begin{array}{r} 6 \\ - 0 \\ \hline 6 \end{array}$$

$$\begin{array}{r} 5 \\ - 4 \\ \hline 1 \end{array}$$

$$\begin{array}{r} 4 \\ - 3 \\ \hline 1 \end{array}$$

$$\begin{array}{r} 7 \\ - 1 \\ \hline 6 \end{array}$$



$$\begin{array}{r} 5 \\ - 2 \\ \hline 3 \end{array}$$

$$\begin{array}{r} 7 \\ - 6 \\ \hline 1 \end{array}$$

$$\begin{array}{r} 6 \\ - 4 \\ \hline 2 \end{array}$$

$$\begin{array}{r} 3 \\ - 1 \\ \hline 2 \end{array}$$



$$\begin{array}{r} 6 \\ - 1 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 4 \\ - 2 \\ \hline 2 \end{array}$$

$$\begin{array}{r} 7 \\ - 3 \\ \hline 4 \end{array}$$

$$\begin{array}{r} 5 \\ - 5 \\ \hline 0 \end{array}$$



$$\begin{array}{r} 7 \\ - 0 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 6 \\ - 6 \\ \hline 0 \end{array}$$

$$\begin{array}{r} 3 \\ - 2 \\ \hline 1 \end{array}$$

$$\begin{array}{r} 6 \\ - 2 \\ \hline 4 \end{array}$$



$$\begin{array}{r} 6 \\ - 5 \\ \hline 1 \end{array}$$

$$\begin{array}{r} 5 \\ - 3 \\ \hline 2 \end{array}$$

$$\begin{array}{r} 7 \\ - 7 \\ \hline 0 \end{array}$$

$$\begin{array}{r} 4 \\ - 1 \\ \hline 3 \end{array}$$



$$\begin{array}{r} 4 \\ - 4 \\ \hline 0 \end{array}$$

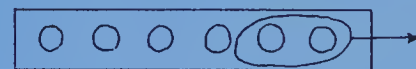
$$\begin{array}{r} 7 \\ - 5 \\ \hline 2 \end{array}$$

$$\begin{array}{r} 5 \\ - 5 \\ \hline 0 \end{array}$$

$$\begin{array}{r} 4 \\ - 0 \\ \hline 4 \end{array}$$

Reinforcement

1. With bingo chips and a die play "Roll and Change". Ask the students to take turns rolling the die and saying the number as the others change their set of bingo chips accordingly. Ask individual students to explain what they had to do to get the number that was rolled on the die.



I subtracted two.
That left four.

2. Flash subtraction name cards to minuends of 7 or call out subtraction names. Ask the students to record the number on a piece of paper, then check their answers orally before they hear the next name. Hearing the answer immediately after each example helps to reinforce correct name and number association without creating pressure for speedy responses.

Enrichment

Give each student the following worksheet. Have the students write the numerical value of each square; colour red the squares with a value of more than 4; and colour green those with a value of less than 4. The squares equaling 4 should be left white.

3 - 2	7 - 3	7 - 6	4 - 0		six
7 - 2	4	five			three
two	5 - 1		6 - 2		6 - 1
7	4 - 2	7 - 1	four		6 - 5
6 - 4		one		5 - 2	seven

Extra Practice

Subtract.

$\begin{array}{r} 5 \\ - 2 \\ \hline 3 \end{array}$	$\begin{array}{r} 6 \\ - 4 \\ \hline 2 \end{array}$	$\begin{array}{r} 7 \\ - 3 \\ \hline 4 \end{array}$	$\begin{array}{r} 4 \\ - 1 \\ \hline 3 \end{array}$	$\begin{array}{r} 7 \\ - 5 \\ \hline 2 \end{array}$
$\begin{array}{r} 6 \\ - 2 \\ \hline 4 \end{array}$	$\begin{array}{r} 7 \\ - 0 \\ \hline 7 \end{array}$	$\begin{array}{r} 5 \\ - 1 \\ \hline 4 \end{array}$	$\begin{array}{r} 4 \\ - 3 \\ \hline 1 \end{array}$	$\begin{array}{r} 7 \\ - 1 \\ \hline 6 \end{array}$
$\begin{array}{r} 7 \\ - 2 \\ \hline 5 \end{array}$	$\begin{array}{r} 7 \\ - 6 \\ \hline 1 \end{array}$	$\begin{array}{r} 7 \\ - 4 \\ \hline 3 \end{array}$	$\begin{array}{r} 6 \\ - 5 \\ \hline 1 \end{array}$	$\begin{array}{r} 7 \\ - 7 \\ \hline 0 \end{array}$

Worksheet A25

Pages 95-96

UNIT 5 LESSON 9

Objective A26

Subtract from 5, 6, and 7.

Vocabulary

Subtraction names

Materials

Large, three-sided, cardboard partition

Blocks

Boxes

Floor number line to 10

Subtraction Name Cards

Introducing the Lesson

Play "Guess How Many" using the partition as a shield for a student to work behind. The student chooses five, six, or seven blocks to start. Behind the partition, he or she hides some under a box and leaves the rest showing. He or she then removes the partition. The others must guess how many are hidden.



I started with five. Right. Three were hidden. How many are hidden? Three plus two are five.

If some students have difficulty visualizing the hidden set, encourage them to count on from the set that is showing, while tapping the box for each of the hidden blocks. The taps act as a tally.

tap tap tap



Two.

Three, four, five.

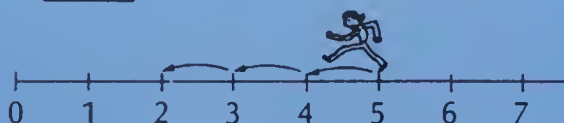
Teaching the Lesson

Review using a floor number line to help solve subtraction examples. Show a subtraction name card and ask a student to act out the situation.

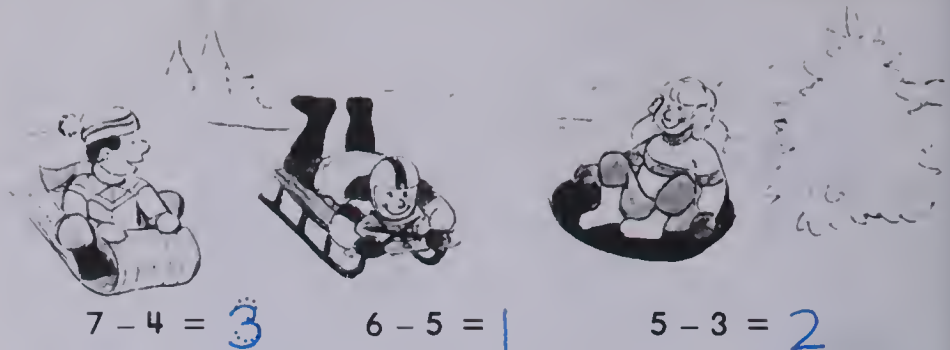
$$5 - 3$$

Start at 5.

Go back three.



Using the Subtraction Name Cards and boxes labelled from 0 to 6, have the students take turns reading a name card and placing it in the corresponding box. If necessary, provide counters for them.



$$7 - 4 = 3$$

$$6 - 5 = 1$$

$$5 - 3 = 2$$

$$7 - 2 = 5$$

$$6 - 2 = 4$$

$$5 - 1 = 4$$

$$7 - 6 = 1$$

$$6 - 0 = 6$$

$$5 - 4 = 1$$

$$7 - 0 = 7$$

$$6 - 3 = 3$$

$$5 - 0 = 5$$

$$7 - 3 = 4$$

$$6 - 6 = 0$$

$$5 - 2 = 3$$

$$7 - 1 = 6$$

$$6 - 4 = 2$$

$$5 - 5 = 0$$

$$7 - 5 = 2$$

$$6 - 1 = 5$$

$$7 - 7 = 0$$

Subtraction facts to 7

ninety-seven 97

Using the Pages

- Page 97 can be used for individual practice or as a group speed and/or accuracy check. Start the students together on one row; see how quickly they can "slide" down the row, or see if they can go down the row without errors.
- Page 98 provides mixed practice for minuends to 7.

START

7

- 2

5

6

- 3

3

4

- 1

3

6

- 1

5

5

- 4

1

7

- 5

2

3

- 2

1

7

- 6

1

6

- 4

2

7

- 1

6

6

- 5

1

5

- 3

2

7

- 3

4

4

- 2

2

6

- 0

6

7

- 4

3

6

- 2

4

5

- 0

5

7

- 7

0

7

- 0

7

6

- 6

0

5

- 2

3

FINISH

98

ninety-eight

Subtraction facts to 7

Reinforcement

1. Provide the students with a worksheet of subtraction examples. Ask them to circle any that are incorrect and to re-write the example correctly.

$\begin{array}{r} 6 \\ -2 \\ \hline 4 \end{array}$	$\begin{array}{r} 5 \\ -2 \\ \hline 3 \end{array}$	$\begin{array}{r} 3 \\ -1 \\ \hline 1 \end{array}$	$\begin{array}{r} 3 \\ -1 \\ \hline 2 \end{array}$	$\begin{array}{r} 7 \\ -4 \\ \hline 2 \end{array}$	$\begin{array}{r} 7 \\ -4 \\ \hline 3 \end{array}$
$5 - 4 = 1$	$6 - 3 = 2$ $6 - 3 = 3$	$4 - 4 = 0$	$7 - 0 = 0$ $7 - 0 = 7$		

2. Provide two dice and counters. Have the students roll both dice, find the greater number, and model that set with counters. They then subtract the number from the other die by moving some counters aside and writing the corresponding number sentence.


 $5 - 3 = 2$

Enrichment

Construct a class graph of favourite winter sports. Provide each student with a square of paper (10 cm × 10 cm) to illustrate the sport he or she likes best. Paste these onto a large sheet in horizontal or vertical bar-graph form.

Extra Practice

Subtract.

$7 - 1 = \boxed{6}$	$6 - 5 = \boxed{5}$	$5 - 3 = \boxed{2}$
$6 - 4 = \boxed{2}$	$7 - 6 = \boxed{1}$	$4 - 1 = \boxed{3}$
$7 - 2 = \boxed{5}$	$3 - 3 = \boxed{0}$	$6 - 2 = \boxed{4}$
$7 - 3 = \boxed{4}$	$6 - 3 = \boxed{3}$	$7 - 5 = \boxed{2}$

Worksheet A26

Pages 97-98

UNIT 5 LESSON 10

Objective PS2

Interpret and solve subtraction picture problems.

Vocabulary

Subtract, take away, minus, subtraction number sentence

Materials

Subtraction Name Cards
Before and After Cards

Introducing the Lesson

Distribute Subtraction Name Cards, one per student. Call a number from zero through seven. Each student with a name for that number stands up. Have them read the names and then exchange cards. Repeat the activity.

Four. $7 - 3 = 4$ $5 - 1 = 4$ $6 - 2 = 4$

Teaching the Lesson

Using Before and After Cards, have the students describe subtraction situations.



Five snowmen were in the forest.



Two snowmen melted. Now there are only three snowmen left.

After adequate oral practice, encourage the students to record the subtraction number sentences that describe the pictured situations.



Five lights are burning.



One light burns out.

Four lights are left.

$$5 - 1 = 4$$

Reverse this activity by providing a subtraction number sentence and having students take turns using the pictures to illustrate it, or acting out a corresponding situation.



$$6 - 2 = 4$$



$$5 - 3 = 2$$



$$7 - 4 = 3$$



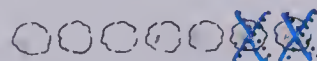
$$5 - 1 = 4$$



$$7 - 3 = 4$$



$$6 - 3 = 3$$



$$7 - 2 = 5$$



$$5 - 2 = 3$$



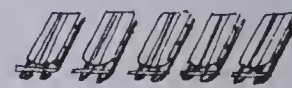
$$5 - 4 = 1$$



$$6 - 4 = 2$$



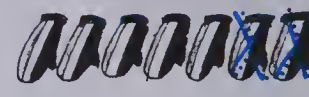
$$7 - 3 = 4$$



$$5 - 0 = 5$$



$$6 - 5 = 1$$



$$7 - 2 = 5$$

Subtraction sentences for facts to 7; problem solving

ninety-nine 99

Using the Page

- This lesson reviews subtraction vocabulary and translations from real-life situations to mathematical number sentences (and vice versa). Page 99 follows up this activity through the interpretation of illustrated subtraction situations. Number sentence frames are provided.

Add.

$$\begin{array}{r} 4 \\ + 2 \\ \hline 6 \end{array} \quad \begin{array}{r} 3 \\ + 4 \\ \hline 7 \end{array} \quad \begin{array}{r} 2 \\ + 3 \\ \hline 5 \end{array} \quad \begin{array}{r} 1 \\ + 5 \\ \hline 6 \end{array} \quad \begin{array}{r} 0 \\ + 6 \\ \hline 6 \end{array}$$

Subtract.

$$\begin{array}{r} 6 \\ - 2 \\ \hline 4 \end{array} \quad \begin{array}{r} 7 \\ - 3 \\ \hline 4 \end{array} \quad \begin{array}{r} 5 \\ - 4 \\ \hline 1 \end{array} \quad \begin{array}{r} 6 \\ - 5 \\ \hline 1 \end{array} \quad \begin{array}{r} 7 \\ - 4 \\ \hline 3 \end{array}$$

Add.

$4 + 1 = 5 \quad 0 + 5 = 5 \quad 3 + 3 = 6$

$2 + 5 = 7 \quad 2 + 4 = 6 \quad 4 + 3 = 7$

Subtract.

$6 - 1 = 5 \quad 7 - 2 = 5 \quad 5 - 3 = 2$

$6 - 4 = 2 \quad 5 - 2 = 3 \quad 7 - 5 = 2$

Add.



$3 + 2 = 5$



$6 + 1 = 7$

Subtract.



$5 - 4 = 1$



$6 - 0 = 6$

100 one hundred

Unit 5 Test

Informal Assessment

1. Addition and Subtraction Skills

Use flash cards for facts to sums of 7. Check each student individually by showing five to ten addition and five to ten subtraction combinations. Allow a student as much time as he or she requires to solve each combination and answer orally. Have counters available. Keep track of which students:

a. quickly respond to most or all combinations. These students are likely working at a recall level and should be ready for more facts (Unit 6—facts to 9) and for increased emphasis on speed of recall.

b. pause to think, then respond. Some of these students may be counting to themselves (counting on or back). Are they counting from the greater addend? Others may be reasoning or using known facts to help (for instance $3 + 3 = 6$ so $3 + 4$ must equal 7; or $2 + 5 = 7$ so $7 - 5$ must equal 2). These students are not yet at a recall level but are using sound solution methods. For these students continue working with the facts to 7 as new facts are introduced.

c. require fingers or counters to solve most or all combinations. These children may need to model both addends, then count up all the counters; or, in subtraction, model the starting set, count off the set to be subtracted, and count from one to find the remaining subset. These children are still working at a relatively immature level and are not ready to “memorize” combinations. Slow down the pace of introducing new facts to these children. Encourage the use of counting-on strategies, particularly adding one and two and adding by starting from the greater addend.

2. Numeral Printing Skills

As the student writes his or her problems, check to see if each numeral is being properly formed.

Problem Solving Activities

Assign Level 1, Unit 5

UNIT 5

TEST

- Part 1: Add and subtract in vertical form, no model provided.
 Part 2: Add and subtract in horizontal form, no model provided.
 Part 3: Complete an illustrated model by adding onto or subtracting from a given set, depending on the indicated operation.

UNIT 6

Addition and Subtraction to 9

Theme: Fairy tales and nursery rhymes

Lesson		Objective	Pages
1	A27	Add sums to 8.	101-102
2	A28	Add sums to 9.	103-104
3	A29	Add sums to 7, 8, and 9.	105-106
4	A30	Add to sums of 5, 6, 7, 8, and 9.	107-108
5	A31	Subtract from 8.	109-110
6	A32	Subtract from 9.	111-112
7	A33	Subtract from 8 and 9.	113-114
8	A34	Subtract from numbers to 9.	115-116
9	A35	Add or subtract mixed examples to sums of 9.	117-118
10	PS3	Interpret addition and subtraction picture problems.	119
Test		Addition-subtraction facts to 9.	120

Vocabulary

add	plus
addition name	addition sentence
guess	groups
add on	count on
clap on	greater
lesser	subtract
take away	minus
less	subtraction sentence
part	whole
starting set	subtraction name
count back	

Printed Directions:

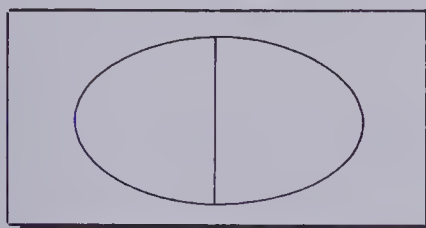
Show Jack the path of 9s.
Find the magic slipper.
Watch the signs.
Match names for the same number.

Materials

Numerals Cards: $\boxed{0}$ to $\boxed{20}$ — for Teacher (T) and for Pupils* (P)

Sign Cards: $\boxed{+}$, $\boxed{-}$, and $\boxed{=}$

Placemats: for teacher and each pupil



Addition Name Cards: $\boxed{5 + 3}$

Subtraction Name Cards: $\boxed{7 - 6}$

Wall number line from 0 to 50

Floor number line from 0 to 20

Books of nursery rhymes and fairy tales

counters: beans, bingo chips*, paper clips

egg cartons

blank dice

crayons

pencils

rubber stamps

bags

old magazines

interlocking cubes

construction paper

plastic glasses

wooden blocks

paper plates

unlined paper

boxes

stamp pad

jars

attribute blocks

chart paper

spoons

paper cups

*Available in Houghton Mifflin K-2 Activity Kit

About This Unit

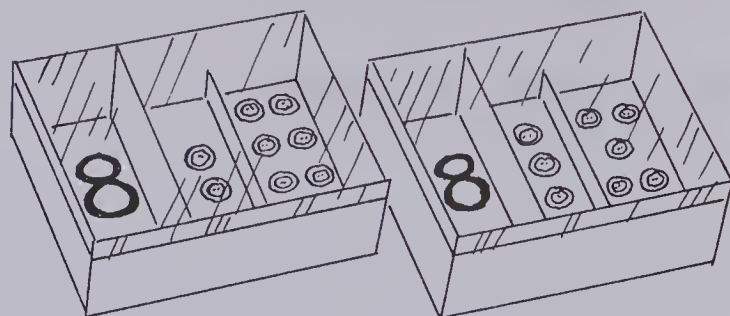
Unit 6 introduces addition and subtraction facts for 8 and 9, and reinforces number facts and concepts introduced in earlier units.

Several ideas introduced in earlier units are more fully developed in Unit 6. The names-for-numbers approach is used to introduce the addition facts. Emphasis is placed on recognizing what numbers go together to make 8, for example. Games, such as Shake and Separate, develop this concept.

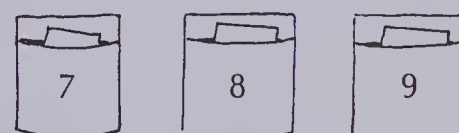
○ ○ ○ ○ ○ ● ● ● $5 + 3 = 8$ Shake.

● ● ○ ○ ○ ○ ○ ○ $2 + 6 = 8$

Number boxes provide for the same kind of understanding: that 8 can be grouped in many ways.



Sorting name cards according to sums is a more abstract activity emphasizing that numbers have many names.



Counting on to get 8 in all, and guessing how many are hidden if there are 8 in all, develop the ability to recognize which numbers go together to make 8. This reinforces the concept of the inverse operation: the reversibility of addition and subtraction (developed more thoroughly in Unit 6). Such exercises as to cover and uncover a subset, to take away and give back objects, and to count forward then back on the number line, lead to paired number sentences, such as $3 + 2 = 5$ $5 - 2 = 3$. In no case



is it essential for children to grasp this relationship in order to complete the exercises, however the exposure is valuable. Research into cognitive development suggests that these understandings are developmental in nature and may not be within reach of many of the children in their first year of school.

The pupils are given further intuitive exposure to the commutative property through "switch around" activities and matching related names.



$2 + 3$

$\boxed{2 + 3}$

$\boxed{3 + 2}$

$3 + 2$

For students who are using counting methods to complete addition and subtraction examples, exercises are provided to develop counting-on skills. Particular exercises encourage them to internalize their counting procedures by tallying + 1, + 2, and + 3 in their heads;

hearing and tallying claps; counting silently while reading the number line; and counting by feeling objects without looking.

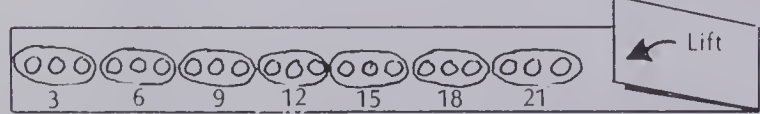
Activity Centre

Organize a counting and grouping centre. This number centre is designed to provide hands-on experience with large groups of objects as intuitive preparation for Unit 7 (numbers to 20), Unit 9 (place value), and Unit 12. It is meant to encourage students to see that we can count by ones, or, more efficiently, group and count when faced with larger quantities, and that counting by ones or by grouping and counting have the same result. The activities encourage them to recognize groups and organize materials for easier counting and help them to discover the basis of our place-value system: groups of ten. However, in this unit no explicit or formal teaching of place value is presented; that is done in Unit 9. Since the students will have had oral practice with counting higher numbers, but will not necessarily have had much experience printing these numerals, have a number line close at hand for them to find and copy the numerals they need for each activity.

The following activities are suggested for the counting and grouping centre.

1. Stamp and Count

Provide a stamp, a pad, and long strips of paper. Have a student make a row of stamps and count how many. Record the total, but hide it under a flap. Then ask the student to circle groups of 2, 3, 5, or 10 with a crayon. Under the last stamp in each row, have the student record the running total to result in a multiple pattern for 2, 3, 5, or 10. Display the strips for counting practice. Students lift the flap to check their count.



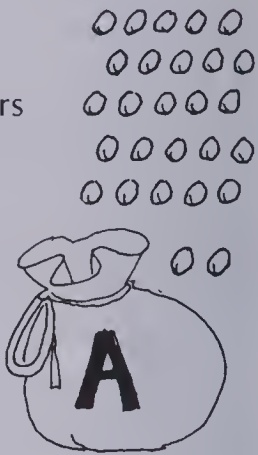
2. Count and Tally

Provide several bags or jars of objects with between 25 and 50 buttons, bolts, acorns, paper clips, or spools, etc. in each. Using a basic worksheet format, the student chooses a bag, groups the objects as outlined on the worksheet, records the number of groups

and leftovers, and records how many in all counting by ones. This activity should be done orally, first, and again with guided practice recording how many groups and leftovers. If you make six to eight sets, work with six to eight students at a time until they are comfortable with the format. Later, they can use the activity with all the sets of materials.

Which bag? A

Groups _____ Leftovers _____
____ groups of 2, and _____
____ groups of 3, and _____
____ groups of 4, and _____
5 groups of 5, and 2
____ groups of 10, and _____
How many in all? 27



3. Search and Find

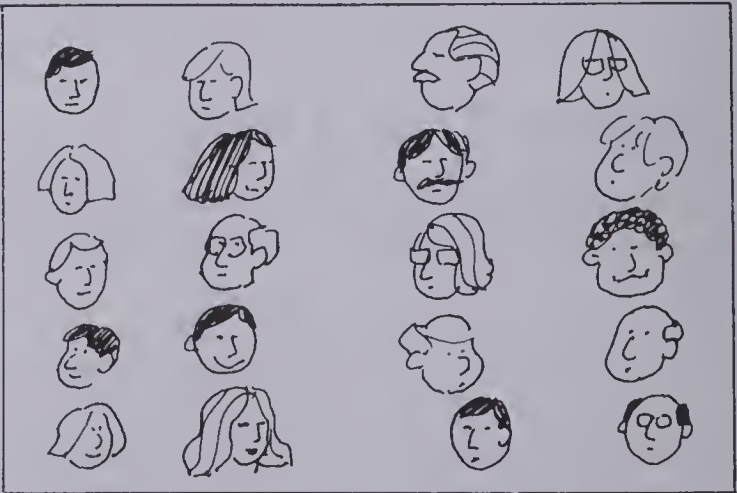
Provide old magazines for students to look for specific objects, such as cars, trees, jars, boxes, faces, shoes, etc. Cut these out and paste them onto large sheets of paper in groups or rows of a specific size—twos, threes, fives, or tens are best. Use these large charts for oral counting practice and for estimating practice.

How many faces in all? Guess.

Count by ones.

Count by twos.

Count by fours. (Use the whisper-SAY method 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, ...) Can you see a group of ten? Put this string loop around ten faces. Can you see another ten?



4. Guess and Check

Provide five jars marked A, B, C, D, and E.

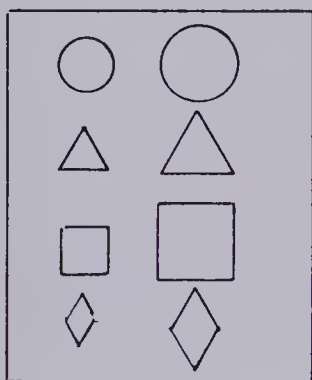
Put between ten and fifty objects in each.

Provide each student with a paper to record

a guess about the number of objects in each jar. After all the guesses have been recorded a student counts to check exactly how many are in each, then records and compares this tally with the original estimate. Change the number of objects in the jars as often as necessary.

5. Sort and Count

Provide several sets of attribute blocks. If these are not available, make construction paper shapes in four colours. Provide a worksheet for sorting and recording how many of each shape. Students will need a sight vocabulary of: big, little, red, green, blue, yellow, shapes.



- | | |
|-------------------|-------------------------|
| ___ red shapes | ___ big shapes |
| ___ yellow shapes | ___ big red shapes |
| ___ green shapes | ___ little shapes |
| ___ blue shapes | ___ little green shapes |

- | | |
|------------------------|---------------------------------|
| ___ \triangle s | ___ big \triangle s |
| ___ blue \triangle s | ___ little \bigcirc s |
| ___ \square s | ___ big red \square s |
| ___ yellow \square s | ___ little yellow \triangle s |

6. Break in Tens

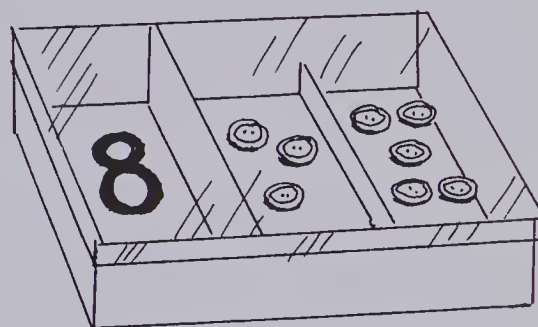
Provide cubes that join. One student times a 30 second or one minute interval while the others make as long a block train as they can. When time is up, trains are compared to find the longest, shortest, and so on. Trains are counted and the number in all is recorded for each. Trains are then broken into tens and leftovers. The students count by tens and ones to check. Have a student at the chalkboard to record the results. Repeat the activity with other time keepers and each student making his or her record.

John	52		(10, 20, 30, 40, 50, 51, 52) 5 tens, 2 leftovers
Sandy	47		(10, 20, 30, 40, 41...47) 4 tens, 7 leftovers

7. Shake Boxes

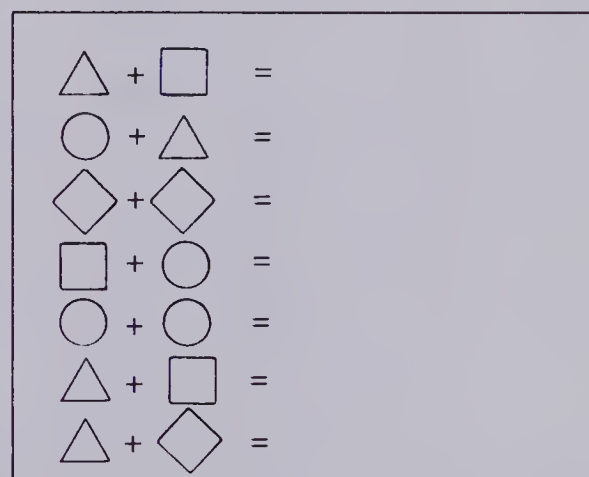
Use card or note paper boxes with plastic lids. Cut a piece of card the size of the box bottom plus an additional 6 cm for the folds. Fold a "fence" to keep the buttons on the right and a half centimetre "fence" to separate the subsets of buttons. Print a numeral to the left of the fence and put that number of buttons or beans to the right of the fence. Tape the see-through lid in place. When shaken, the buttons should move freely to either side of the little fence to produce different arrangements of subsets.

Provide boxes for 5, 6, 7, and 9 also.



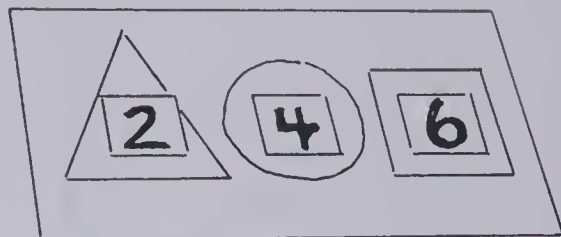
Ideas

1. Play Bingo using the same format as in Unit 5, but fill squares with numbers to 9.
2. Make an addition sentence worksheet using geometric shapes.



Display a large, cardboard pattern card having cutouts of the worksheet shapes. With paper clips make a numeral card visible through each shape. The students match shapes to those on the large pattern card, decide which numerals to print on their worksheet, and then find the sum. Change the numeral cards in the cutout shapes regularly and new combinations will be reinforced. Once the students understand how

to use the “coded worksheets”, try subtraction examples.



$$2 + 4 = 6$$

3. To develop estimation skills, make an estimate graph to record students' guesses. List all the pupils' names down one side. Each day display a container of objects for students to look at and lift. Then record their estimates of how many. At the end of the day, or at a specified time, count the objects and record the actual number at the bottom of the graph.

Guessing Graph

Name	Peanuts	Pennies	Nails
Tom	55		
Ann	72		
Ira	43		
Mary	86		
Britt	100		
How many?	77		

Name _____

Pretest

Unit 6

Add.

$$\begin{array}{r} 5 \\ + 2 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 4 \\ + 1 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 0 \\ + 8 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 5 \\ + 4 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 7 \\ + 1 \\ \hline 8 \end{array}$$

Subtract.

$$\begin{array}{r} 8 \\ - 5 \\ \hline 3 \end{array}$$

$$\begin{array}{r} 9 \\ - 0 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 2 \\ - 1 \\ \hline 1 \end{array}$$

$$\begin{array}{r} 7 \\ - 2 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 6 \\ - 4 \\ \hline 2 \end{array}$$

Add or subtract.

$$\begin{array}{r} 5 \\ - 4 \\ \hline 1 \end{array}$$

$$\begin{array}{r} 7 \\ - 3 \\ \hline 4 \end{array}$$

$$\begin{array}{r} 2 \\ + 6 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 9 \\ - 5 \\ \hline 4 \end{array}$$

$$\begin{array}{r} 4 \\ + 4 \\ \hline 8 \end{array}$$

Print a number sentence for each picture.



$$8 - 2 = 6$$



$$3 + 4 = 7$$



$$3 + 4 = 7$$



$$4 + 4 = 8$$



$$4 + 4 = 8$$



$$7 - 1 = 6$$

$$7 - 1 = 6$$

Name _____

Post-test

Unit 6

Add.

$$\begin{array}{r} 5 \\ + 4 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 6 \\ + 1 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 3 \\ + 2 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 4 \\ + 4 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 3 \\ + 5 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 8 \\ + 1 \\ \hline 9 \end{array}$$

Subtract.

$$\begin{array}{r} 7 \\ - 1 \\ \hline 6 \end{array}$$

$$\begin{array}{r} 8 \\ - 5 \\ \hline 3 \end{array}$$

$$\begin{array}{r} 9 \\ - 9 \\ \hline 0 \end{array}$$

$$\begin{array}{r} 6 \\ - 2 \\ \hline 4 \end{array}$$

$$\begin{array}{r} 7 \\ - 3 \\ \hline 4 \end{array}$$

$$\begin{array}{r} 9 \\ - 2 \\ \hline 7 \end{array}$$

Add or subtract.

$$\begin{array}{r} 6 \\ - 1 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 5 \\ + 4 \\ \hline 9 \end{array}$$

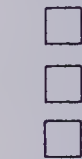
$$\begin{array}{r} 3 \\ - 1 \\ \hline 2 \end{array}$$

$$\begin{array}{r} 6 \\ + 3 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 9 \\ - 2 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 4 \\ + 3 \\ \hline 7 \end{array}$$

Print a number sentence for each picture.



$$3 + 5 = 8$$



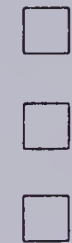
$$6 - 3 = 3$$



$$6 - 3 = 3$$



$$6 - 3 = 3$$



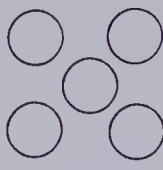
$$7 - 1 = 6$$



$$4 + 5 = 9$$



$$4 + 5 = 9$$



$$4 + 5 = 9$$

Objective A27

Add sums to 8.

Vocabulary

Add, plus, addition names, addition sentence

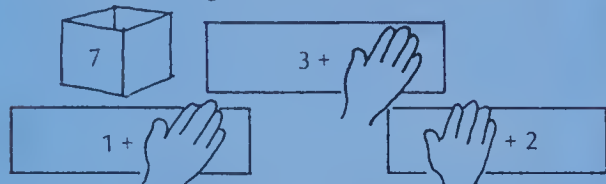
Materials

Addition Name Cards for 5, 6, and 7
Boxes
Paper plates
Blank cards
Wooden blocks
Paper
Crayons

Introducing the Lesson

As a review of names for 5, 6, and 7, mix the Addition Name Cards, give one to each student, and have them put the cards into boxes labelled 5, 6, or 7.

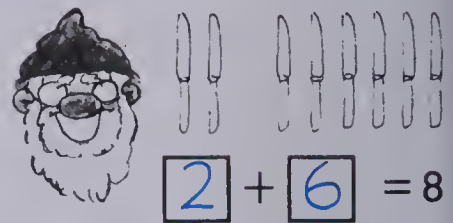
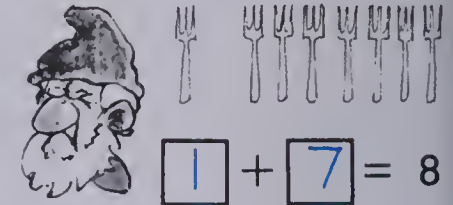
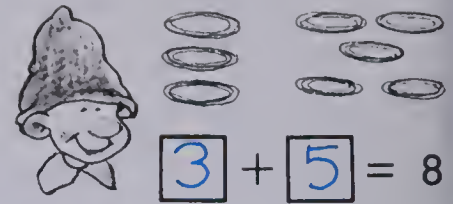
Check the cards in the box labelled 7 by covering one addend to see if the students can guess what is hidden.



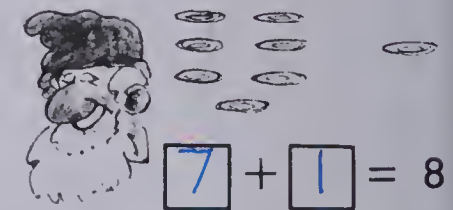
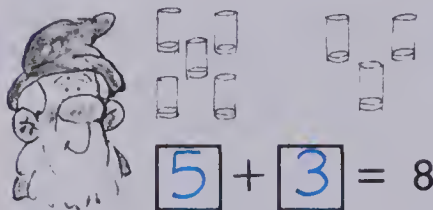
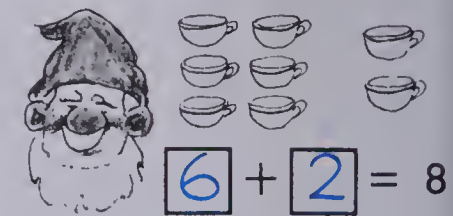
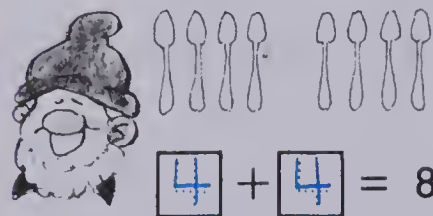
Teaching the Lesson

Using two desks or tables, sort the eight paper plates into two groups, say, four and four. Make and display a Name Card $4 + 4$ for that grouping. Ask other students to come up and sort the plates into two different groups to make another name for eight. Continue doing this until the students have come up with all nine addition names for 8. Put the cards in the 8 box.

Give each student a paper to fold into eight sections and eight blocks. Direct them to put a certain number of blocks on their papers, e.g., "Place one block in each of five sections. How many empty sections?" Three. "Five and three make eight in all." Record the addition sentence on the chalkboard: $5 + 3 = 8$. Follow this procedure until all of the addition names for 8 have been recorded.



Print names for 8.



Add to 8

one hundred one 101


Using the Pages

- Page 101 uses the lesson's "Snow White and the Seven Dwarfs" theme. The students are to decide how many places the dwarfs are setting at the table. Use a chalkboard example to show how the eight spoons, plates, etc., are grouped into two subsets and to show how to record the number in each subset to give name for 8. Note: The names of the seven dwarfs are Sneezy, Dopey, Sleepy, Doc, Happy, Grumpy, and Bashful.
- Page 102 provides mixed practice with addition facts for 5, 6, 7, and 8.

Add.

$2 + 6 = 8$	$4 + 2 = 6$	$3 + 4 = 7$
$3 + 2 = 5$	$5 + 3 = 8$	$3 + 3 = 6$
$4 + 4 = 8$	$5 + 2 = 7$	$7 + 1 = 8$
$6 + 2 = 8$	$8 + 0 = 8$	$2 + 5 = 7$
$1 + 7 = 8$	$6 + 1 = 7$	$0 + 8 = 8$

Help Dopey.
Colour names for 8.




$8 + 0 = 8$
 $2 + 4 = 6$
 $4 + 4 = 8$
 $3 + 4 = 7$
 $7 + 1 = 8$
 $5 + 2 = 7$
 $0 + 8 = 8$
 $6 + 2 = 8$

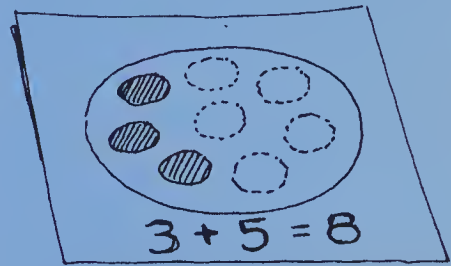
$1 + 5 = 6$
 $1 + 6 = 7$
 $5 + 3 = 8$
 $2 + 6 = 8$
 $3 + 3 = 6$

$3 + 5 = 8$
 $2 + 5 = 7$
 $1 + 7 = 8$

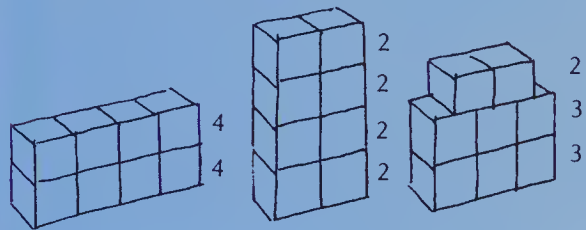
Did you colour 9 cards in all?



- ### Reinforcement
1. Provide Name Cards for 8. Have the students illustrate each using plates, cups, and cutlery as on page 101.
 2. Using the folded papers from the lesson, have the students draw plates in each section and put a different number of cookies on each plate (0 to 8). Then have them draw on to get eight on each plate and record a number sentence.










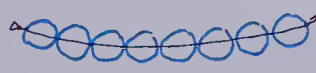

- ### Enrichment
1. Ask the students how many different buildings can be built using eight blocks. Have the students record how many blocks on each "floor".



2. Read "Snow White and the Seven Dwarfs" to the class.

Extra Practice

Draw. Add.

		
$2 + 6 = 8$	$7 + 1 = 8$	$4 + 4 = 8$
		
$8 + 0 = 8$	$5 + 3 = 8$	$6 + 2 = 8$
		
$1 + 7 = 8$	$0 + 8 = 8$	$3 + 5 = 8$

Worksheet A27

Pages 101-102

UNIT 6 LESSON 2

Objective A28

Add sums to 9.

Vocabulary

Guess, groups, addition names

Direction words: Show Jack the path of 9s.

Materials

Lima beans, one side painted
Glass jars
Paper plates
Green and yellow construction paper
leaves

Introducing the Lesson

Show a jar of lima beans (about 30) and ask the students to guess how many are in it. Count orally to check the guess. Repeat for 50 and 75 beans. Did some students use a grouping method (such as making piles of 5, 10, or 20) to sort the counted beans? Show the merits of this method.

Teaching the Lesson

Have the students each take nine of the two-coloured beans.

Give each student two paper plates to place on top of each other making a closed holder for the beans. Play "Shake and Separate". They carefully shake their nine beans, take off the lid, and sort the nine beans into two piles by colour. Ask them to tell, one at a time, how their beans landed and to record the names for 9 on the chalkboard.



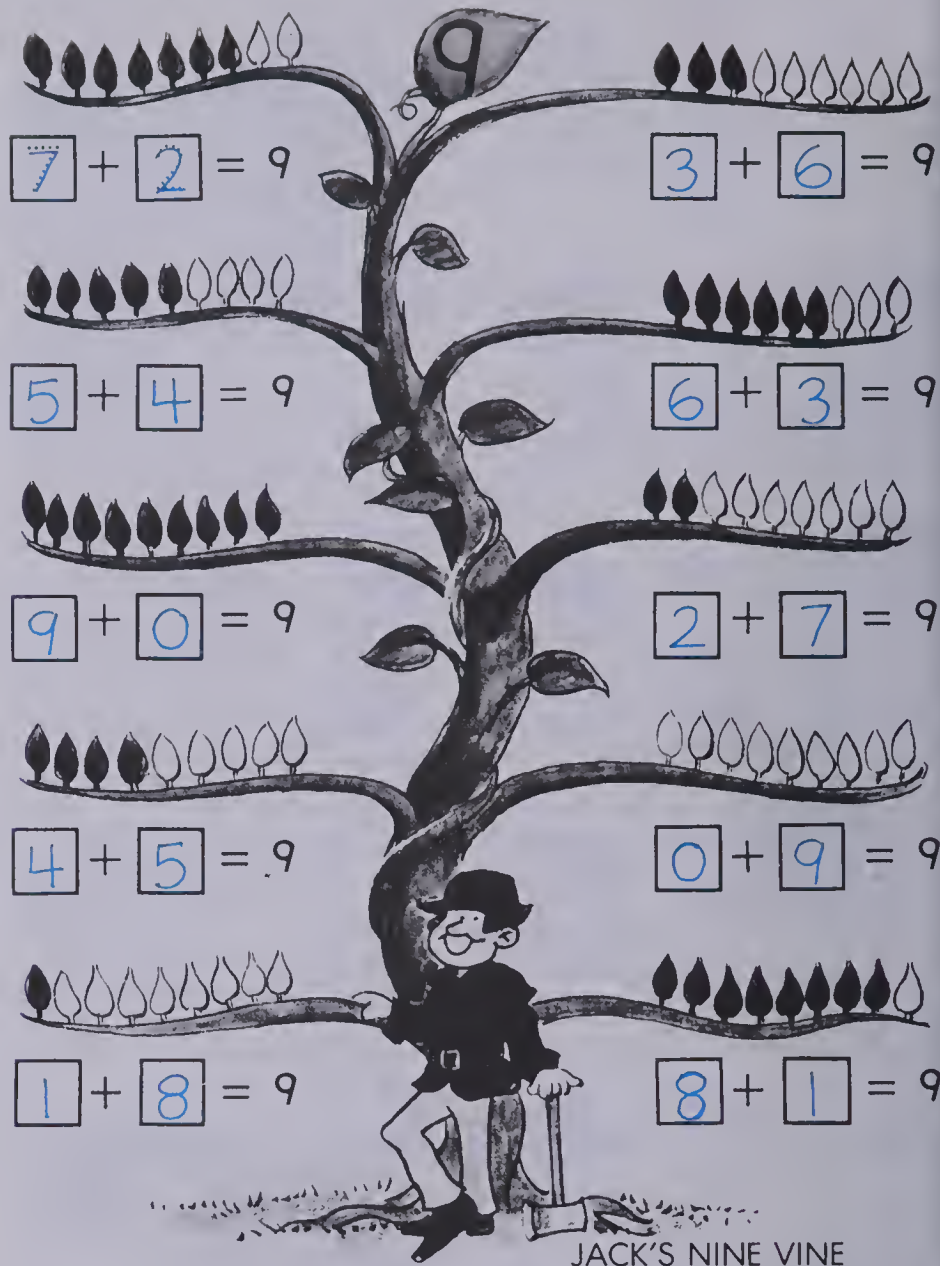
Six black beans. Two black beans.
Three white beans. Seven white beans.
 $6 + 3$ $2 + 7$

Repeat until you have all the addition names for 9. There should be ten recorded on the board.

Have the students match Name Cards for 9 to find related pairs.

$$3 + 6$$

$$6 + 3$$



Add to 9

one hundred three 103

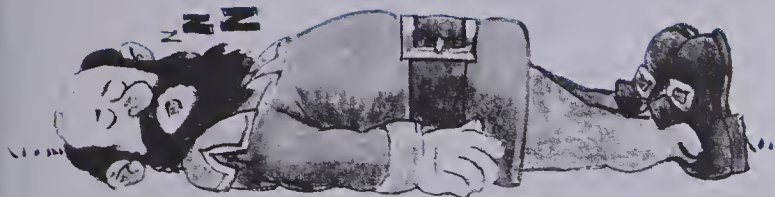
Using the Pages

- Page 103 is similar to the lima bean activity in the lesson. Students are required to write addition names for 9.
- On page 104, first ask the students to write all the sums and then to join all sums that are 9 to make a path of 9s to the gold.

Add. Show Jack the path of 9s.



$\begin{array}{r} 2 \\ +7 \\ \hline 9 \end{array}$	$\begin{array}{r} 4 \\ +4 \\ \hline 8 \end{array}$	$\begin{array}{r} 8 \\ +1 \\ \hline 9 \end{array}$	$\begin{array}{r} 0 \\ +9 \\ \hline 9 \end{array}$	$\begin{array}{r} 6 \\ +3 \\ \hline 9 \end{array}$	$\begin{array}{r} 3 \\ +4 \\ \hline 7 \end{array}$
$\begin{array}{r} 9 \\ +0 \\ \hline 9 \end{array}$	$\begin{array}{r} 3 \\ +6 \\ \hline 9 \end{array}$	$\begin{array}{r} 4 \\ +5 \\ \hline 9 \end{array}$	$\begin{array}{r} 2 \\ +5 \\ \hline 7 \end{array}$	$\begin{array}{r} 7 \\ +2 \\ \hline 9 \end{array}$	$\begin{array}{r} 1 \\ +8 \\ \hline 9 \end{array}$



$\begin{array}{r} 0 \\ +8 \\ \hline 8 \end{array}$	$\begin{array}{r} 1 \\ +6 \\ \hline 7 \end{array}$	$\begin{array}{r} 3 \\ +5 \\ \hline 8 \end{array}$	$\begin{array}{r} 8 \\ +1 \\ \hline 9 \end{array}$	$\begin{array}{r} 2 \\ +7 \\ \hline 9 \end{array}$	$\begin{array}{r} 6 \\ +3 \\ \hline 9 \end{array}$
$\begin{array}{r} 5 \\ +2 \\ \hline 7 \end{array}$	$\begin{array}{r} 2 \\ +6 \\ \hline 8 \end{array}$	$\begin{array}{r} 4 \\ +3 \\ \hline 7 \end{array}$	$\begin{array}{r} 0 \\ +9 \\ \hline 9 \end{array}$	$\begin{array}{r} 3 \\ +2 \\ \hline 5 \end{array}$	$\begin{array}{r} 6 \\ +0 \\ \hline 6 \end{array}$
$\begin{array}{r} 1 \\ +7 \\ \hline 8 \end{array}$	$\begin{array}{r} 3 \\ +3 \\ \hline 6 \end{array}$	$\begin{array}{r} 4 \\ +4 \\ \hline 8 \end{array}$	$\begin{array}{r} 3 \\ +6 \\ \hline 9 \end{array}$	$\begin{array}{r} 4 \\ +5 \\ \hline 9 \end{array}$	



Reinforcement

1. Provide a chalkboard exercise of horizontal sums for 8 and 9.

$3 + 5 = \square$	$6 + 2 = \square$
$6 + 3 = \square$	$1 + 7 = \square$
$8 + 1 = \square$	$4 + 5 = \square$
$4 + 4 = \square$	$3 + 6 = \square$

2. Provide paper plates and nine beans for the students to shake, separate, and record their names for 9.

Enrichment

1. Grow beans in jars. Watch and record the growth.



blotter paper

2. Read "Jack and the Beanstalk" to the class.

Extra Practice

Colour names for 9.

$5 + 3$	$1 + 8$	$3 + 6$
$4 + 4$	$4 + 5$	$4 + 3$
$6 + 3$	$6 + 2$	$7 + 2$
$8 + 1$	$0 + 9$	$8 + 0$
$5 + 2$	$2 + 7$	$6 + 3$
$1 + 7$	$2 + 5$	$9 + 0$
		$5 + 4$

Worksheet A28

Pages 103-104

UNIT 6 LESSON 3

Objective A29

Add sums to 7, 8, and 9.

Vocabulary

Add on, addition sentence

Direction words: Find the magic slipper.

Materials

Number line to 50

Placemats 

Bingo chips*

Addition Name Cards for 7, 8, and 9

Paper plates

Crayons

Introducing the Lesson

Play a silent counting game where the students must add on mentally using the number line for reference. Start by adding on one. "Start at six; add on one." Seven. "Fifteen." Sixteen. "Thirty-five." Thirty-six.

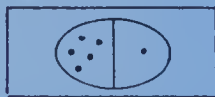
Have the students add on two and then three in the same way.

Emphasize starting sets to 20.

Teaching the Lesson

Using placemats and bingo chips, give the students directions for building add on number patterns as you record the patterns on the chalkboard as an addition sentence. Have the students try recording the add on patterns on paper as an addition sentence, also.

"Start with 5."



$$5 + 1 = 7$$

"Add on one."



$$5 + 2 = 7$$

"Add on two."



$$5 + 3 = 8$$

"Add on three."

Repeat this activity using starting sets of four and six bingo chips.

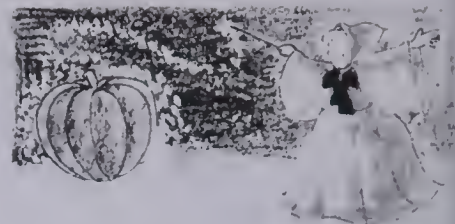
Mix the Addition Name Cards for 7, 8, and 9 and have the students sort them onto paper plates labelled 7, 8, and 9.

Add.

$$\begin{array}{r} 4 \\ +4 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 6 \\ +3 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 4 \\ +5 \\ \hline 9 \end{array}$$



$$\begin{array}{r} 2 \\ +7 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 3 \\ +5 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 0 \\ +9 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 1 \\ +8 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 3 \\ +6 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 2 \\ +6 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 6 \\ +2 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 5 \\ +4 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 1 \\ +6 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 0 \\ +8 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 3 \\ +4 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 2 \\ +5 \\ \hline 7 \end{array}$$



$$\begin{array}{r} 1 \\ +7 \\ \hline 8 \end{array}$$

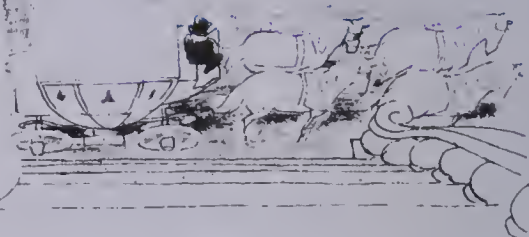
$$\begin{array}{r} 7 \\ +2 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 5 \\ +3 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 8 \\ +0 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 8 \\ +1 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 9 \\ +0 \\ \hline 9 \end{array}$$



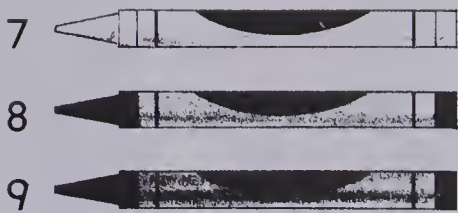
Addition facts for 7, 8, and 9

one hundred five 105

Using the Pages

- Page 105 provides mixed, vertical addition practice with sums to 7, 8, and 9.
- On page 106, students are to first write the sums and then colour the slipper according to the key at the top of the page. Only one slipper is unique in its colour: the yellow slipper for $4 + 3 = 7$.

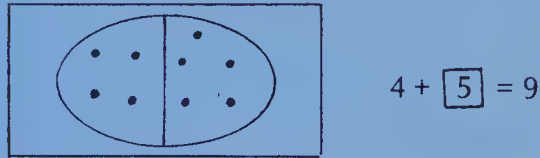
Add. Colour.
Find the magic slipper.



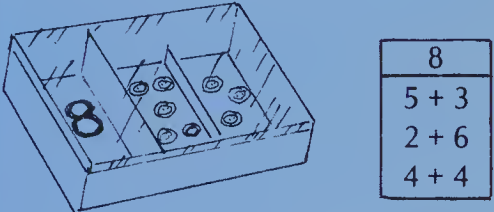
$3 + 5 = 8$ 	$3 + 6 = 9$ 	$0 + 9 = 9$
$2 + 7 = 9$ 	$4 + 4 = 8$ 	$1 + 7 = 8$
$6 + 2 = 8$ 	$4 + 5 = 9$ 	$6 + 3 = 9$
$7 + 1 = 8$ 	$8 + 0 = 8$ 	$4 + 3 = 7$
$5 + 4 = 9$ 	$2 + 6 = 8$ 	$5 + 3 = 8$
$8 + 1 = 9$ 	$7 + 2 = 9$ 	$1 + 8 = 9$

Reinforcement

1. Play a "How many more?" game using the placemats and bingo chips. "Start with four bingo chips. How many more to get nine in all?" Five. Ask the students to record the addition sentence.



2. Provide see-through shake-boxes for 7, 8, and 9 (as explained in detail in the Activity Centre ideas in the introduction to this unit) and paper for recording addition names.



3. Provide two dice with the numerals 0 to 5 on each. Ask the students to shake and record open addition sentences using the numbers that turn up.

Enrichment

1. Make a shoe graph. Use the students' shoes to begin. Sort them by colour, material, way of fastening, etc. Choose two attributes to record on the graph. Have the students draw, colour, and cut out a model of their own shoes and then paste it in the appropriate space on the graph.

Shoe Graph

	Leather	Not Leather
Laces		
No laces		

2. Read the story "Cinderella" to the class.

Extra Practice

Add on one.

$6 + 1 = 7$

$8 + 1 = 9$

$7 + 1 = 8$

Worksheet A29

Pages 105-106

Add on two.

$7 + 2 = 9$

$4 + 2 = 6$

$6 + 2 = 8$

Worksheet A29

Add on three.

$5 + 3 = 8$

$6 + 3 = 9$

$4 + 3 = 7$

UNIT 6 LESSON 4

Objective A30

Add to sums of 5, 6, 7, 8, and 9.

Vocabulary

Count on, clap on, greater, lesser, number sentence, addition names

Materials

Addition Name Cards
Wooden blocks
Paper plates
Crayons

Introducing the Lesson

Place a pile of Addition Name Cards conveniently. Have the students take turns recording at the chalkboard as one student claps out an addition name from the card pile. The others listen and count to tell how many claps in all.



$$3 + 4$$

Clap, clap, clap...
clap, clap, clap, clap.
Seven in all.

Show an Addition Name Card. Have the students identify the greater addend and clap on the lesser addend to reach the sum. Ask them to repeat the number sentence out loud.

$6 + 2$ Six: (clap, clap). Eight in all. Six plus two equals eight.

Teaching the Lesson

Provide each student with six blocks and a paper plate. Have them hide as many of the blocks as they choose under the plate and put the rest on top. Ask the others to guess how many are hidden. Lift the plate to check, then move on to the next plate. Repeat using seven, eight, and/or nine blocks in all. Emphasize how many blocks everyone is starting with each time.

Distribute the Addition Name Cards, one per student. Call a number from 5 to 9. The students having Addition Name Cards for that number stand and show their cards. Check each addition name orally before calling another number. Switch cards among the students after every two or three calls.

Add.



$$\begin{array}{r} 3 \\ +4 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 4 \\ +4 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 8 \\ +1 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 7 \\ +0 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 2 \\ +7 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 3 \\ +6 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 1 \\ +7 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 2 \\ +5 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 4 \\ +5 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 0 \\ +8 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 3 \\ +3 \\ \hline 6 \end{array}$$

$$\begin{array}{r} 0 \\ +9 \\ \hline 9 \end{array}$$



$$\begin{array}{r} 0 \\ +7 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 3 \\ +5 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 7 \\ +2 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 1 \\ +5 \\ \hline 6 \end{array}$$

$$\begin{array}{r} 2 \\ +3 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 1 \\ +8 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 4 \\ +2 \\ \hline 6 \end{array}$$

$$\begin{array}{r} 6 \\ +2 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 5 \\ +2 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 1 \\ +4 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 5 \\ +3 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 2 \\ +2 \\ \hline 4 \end{array}$$

$$\begin{array}{r} 4 \\ +3 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 7 \\ +1 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 5 \\ +4 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 8 \\ +0 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 3 \\ +2 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 5 \\ +1 \\ \hline 6 \end{array}$$

$$\begin{array}{r} 9 \\ +0 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 4 \\ +1 \\ \hline 5 \end{array}$$



Addition facts for 5 to 9

one hundred seven 107

Using the Pages

- Discuss the illustrations on page 107. The page provides vertical addition practice for sums to 9.
- On page 108, the students must colour the addition names according to the code at the top of the page to make patchwork quilts for the beds of the three bears.

5

6

7

8

9

3 + 4 = 7	4 + 1 = 5	5 + 3 = 8
0 + 6 = 6	2 + 5 = 7	1 + 5 = 6
4 + 4 = 8	2 + 7 = 9	2 + 3 = 5
3 + 3 = 6	2 + 6 = 8	2 + 4 = 6
5 + 4 = 9	7 + 0 = 7	8 + 1 = 9
6 + 1 = 7	3 + 6 = 9	5 + 2 = 7

1 + 8 = 9	3 + 5 = 8	1 + 4 = 5
4 + 3 = 7	4 + 2 = 6	1 + 7 = 8
5 + 1 = 6	7 + 2 = 9	5 + 0 = 5
4 + 5 = 9	6 + 2 = 8	1 + 6 = 7

6 + 0 = 6	7 + 1 = 8
0 + 8 = 8	
6 + 3 = 9	
3 + 2 = 5	

Extra Practice

Add.

6 + 2 = 8	5 + 4 = 9	1 + 7 = 8
3 + 3 = 6	0 + 8 = 8	3 + 4 = 7
2 + 7 = 9	4 + 4 = 8	6 + 3 = 9
2 + 5 = 7	2 + 4 = 6	3 + 5 = 8
1 + 6 = 7	3 + 2 = 5	8 + 1 = 9

Worksheet A30

Pages 107-108

Reinforcement

1. Provide pencils and paper. Dictate seven or eight number sentences for the students to record and complete, e.g., "Seven plus one equals...?"

$$7 + 1 = 8$$

$$4 + 5 =$$

$$3 + 5 =$$

$$4 + 4 =$$

2. Provide blocks that join for the students to make two-colour patterns for 6, 7, 8, or 9 and paper and pencils for them to record number sentences to match.

Six blocks

	$2 + 4 = 6$
	$3 + 3 = 6$
	$1 + 5 = 6$
	$4 + 2 = 6$
	$5 + 1 = 6$
	$6 + 0 = 6$

Enrichment

1. Provide old magazines for the students to cut out pictures of cars, bicycles, faces, shoes, etc. to use for counting and grouping practice. Paste these onto sheets, then record the counting patterns.

How many shoes?



2. Read the story "Goldilocks and the Three Bears" to the class.

Objective A31

Subtract from 8.

Vocabulary

Subtract, take away, minus, less, subtraction sentence

Materials

Paper

Wooden blocks

T and P Numeral Cards to 8

Sign Cards \square , \square **Introducing the Lesson**

Have each student place his or her fingers (not thumbs) on the edge of a table or desk to make a starting set of eight fingers. Tell them to lift a number of fingers and then say how many are still touching the table. "Start with eight; lift four. How many are left?" *Four.*

Teaching the Lesson

Provide each student with a paper; ask them to fold it into eight sections. Have them use blocks to cover some of the sections as you give directions. "Cover three. How many are uncovered?" Record $8 - 3 = 5$ on the chalkboard. Have the students clear their papers and give them another example. "Cover seven. How many are uncovered?" Record $8 - 7 = 1$.

Using the T Numeral Cards, show $8 - ? = ?$. Choose a student to come and find other cards to make a true subtraction sentence. Record the sentence on the chalkboard. Ask who can make another sentence just by changing the order of some cards.

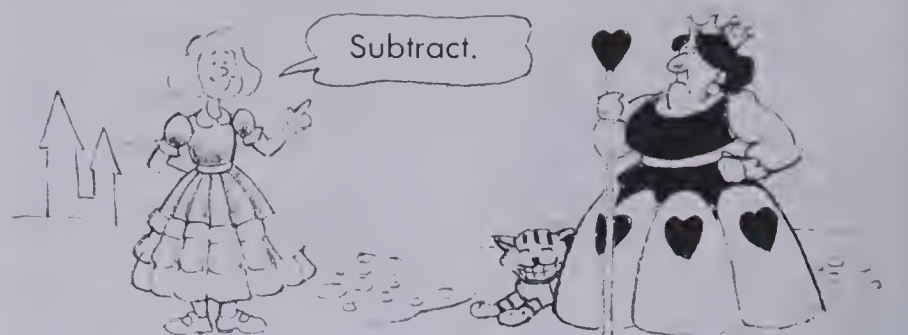
$$\boxed{8} - \boxed{2} = \boxed{6} \rightarrow \boxed{8} - \boxed{6} = \boxed{2}$$

$$\boxed{8} - \boxed{5} = \boxed{3} \rightarrow \boxed{8} - \boxed{3} = \boxed{5}$$

$$\boxed{8} - \boxed{7} = \boxed{1} \rightarrow \boxed{8} - \boxed{1} = \boxed{7}$$

Continue until all subtraction possibilities from 8 have been given. Ask what is special about $\boxed{8} - \boxed{4}$. "Can another subtraction sentence be made from this fact?"

Provide P Numeral Cards. Have students put them in pairs to get 8.



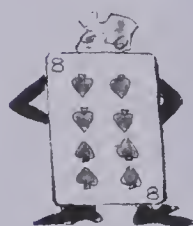
$$8 - 2 = \boxed{6}$$



$$8 - 5 = \boxed{3}$$



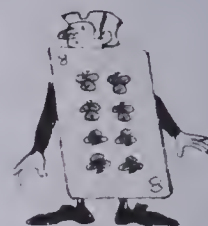
$$8 - 0 = \boxed{8}$$



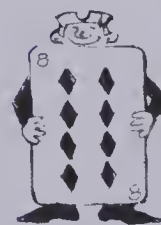
$$8 - 8 = \boxed{0}$$



$$8 - 1 = \boxed{7}$$



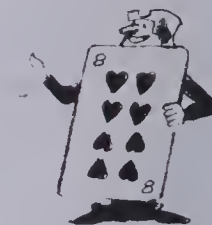
$$8 - 3 = \boxed{5}$$



$$8 - 4 = \boxed{4}$$



$$8 - 7 = \boxed{1}$$



$$8 - 6 = \boxed{2}$$

Subtract from 8

one hundred nine 109

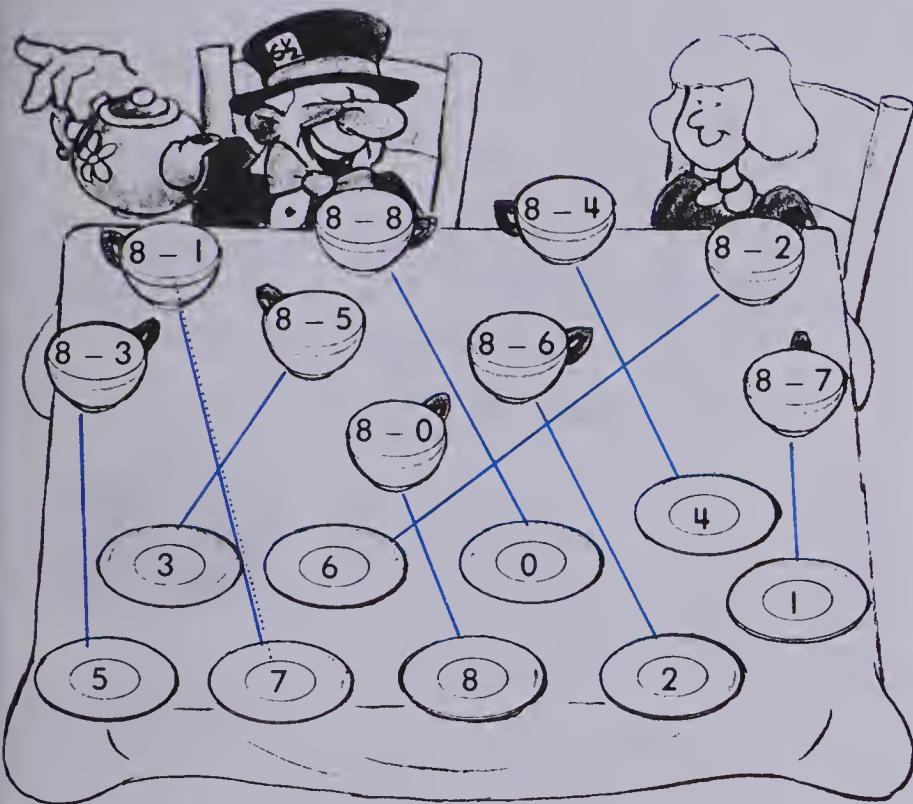
Using the Pages

- Review the method for crossing out to subtract with a chalkboard example before the students do the activity on page 109.
- Talk about the characters illustrated on page 110. Help the students with the matching activity at the bottom of the page.

Subtract.

$\begin{array}{r} 8 \\ - 2 \\ \hline 6 \end{array}$	$\begin{array}{r} 8 \\ - 5 \\ \hline 3 \end{array}$	$\begin{array}{r} 8 \\ - 0 \\ \hline 8 \end{array}$	$\begin{array}{r} 8 \\ - 3 \\ \hline 5 \end{array}$	$\begin{array}{r} 8 \\ - 7 \\ \hline 1 \end{array}$
$\begin{array}{r} 8 \\ - 8 \\ \hline 0 \end{array}$	$\begin{array}{r} 8 \\ - 6 \\ \hline 2 \end{array}$	$\begin{array}{r} 8 \\ - 1 \\ \hline 7 \end{array}$	$\begin{array}{r} 8 \\ - 4 \\ \hline 4 \end{array}$	$\begin{array}{r} 8 \\ - 5 \\ \hline 3 \end{array}$

Match the  and 




110 one hundred ten

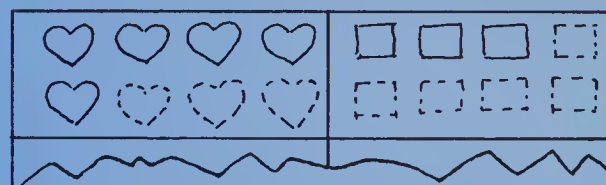
Subtract from 8

Reinforcement

1. Provide paper for the students to draw cross-out illustrations to match the subtraction examples on the top of page 110.

$\begin{array}{r} 8 \\ - 2 \\ \hline 6 \end{array}$	
---	---

2. Using the paper folded into eight sections from the lesson, give directions for how many dots, hearts, sticks, etc., to draw in each section. Then instruct the students to add on to make a set of eight things in each section.



Enrichment

1. Write three numbers at the top of each student's paper (8, 3, 5; 8, 2, 6; 8, 1, 7). Ask them to try to make addition and subtraction number sentences using the three numbers.

$3 + 5 = 8$	$8 - 3 = 5$
$5 + 3 = 8$	$8 - 5 = 3$

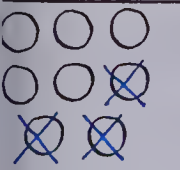
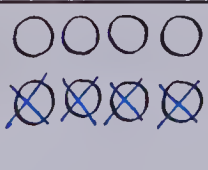
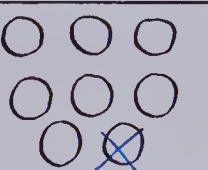
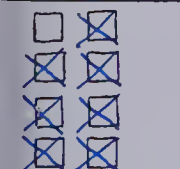
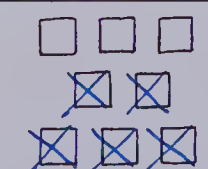

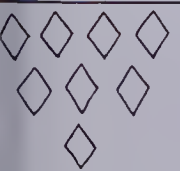
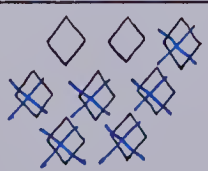

2. Read the rhyme "The Queen of Hearts" and "The Mad Hatter's Tea Party" to the class.

Extra Practice

Worksheet A31

Pages 109-110

Cross out. Subtract.

 $\begin{array}{r} 8 \\ - 3 \\ \hline 5 \end{array}$	 $\begin{array}{r} 8 \\ - 4 \\ \hline 4 \end{array}$	 $\begin{array}{r} 8 \\ - 1 \\ \hline 7 \end{array}$
 $\begin{array}{r} 8 \\ - 7 \\ \hline 1 \end{array}$	 $\begin{array}{r} 8 \\ - 5 \\ \hline 3 \end{array}$	 $\begin{array}{r} 8 \\ - 8 \\ \hline 0 \end{array}$
 $\begin{array}{r} 8 \\ - 0 \\ \hline 8 \end{array}$	 $\begin{array}{r} 8 \\ - 6 \\ \hline 2 \end{array}$	 $\begin{array}{r} 8 \\ - 2 \\ \hline 6 \end{array}$

Objective A32

Subtract from 9.

Vocabulary

Part, whole

Materials

9 construction-paper sheep
Lima beans
Cards in 5 different colours
Black crayons

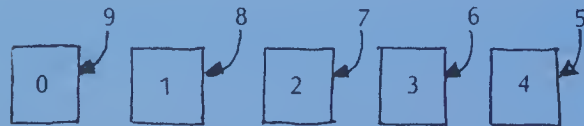
Introducing the Lesson

Display nine construction paper sheep (black on one side and white on the other). Show their white sides and say, "There are nine sheep in all." Have a student turn over two sheep to the black side. "Two sheep are black. How many are white?" Seven. Record $9 - 2 = 7$. Continue until all the subtraction possibilities from 9 have been recorded.

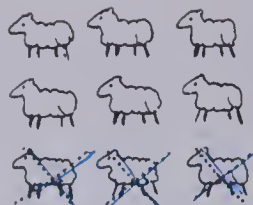
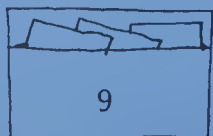
Teaching the Lesson

Provide nine lima beans for each student. Pretend that they are sheep and that some get lost. (Cover them with your hands.) "Little Bo Peep has nine sheep. She loses three of them. (Cover three.) How many are left?" Six. (Uncover the beans.) "Oh, good! The three come back. How many sheep are there now?" Nine. "Oh, no! Five are lost!" And so on.

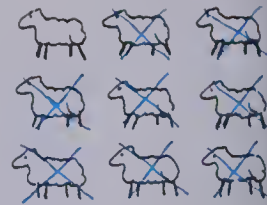
On each side of five different-coloured cards write an addend for 9. (The addends on the front and on the back of the card should together make 9.)



Give each student a turn to choose a card, guess the number on the back, and check. Emphasize before starting that each card adds to nine. When finished, display the Nine Cards in a paper holder labelled with a large nine.

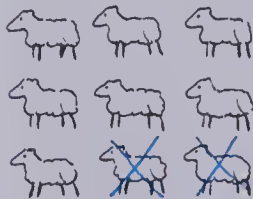


$$9 - 3 = \boxed{6}$$

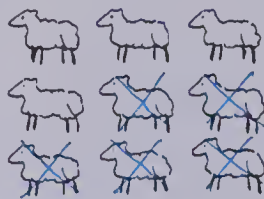


$$9 - 8 = \boxed{1}$$

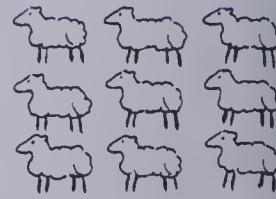
Cross out. Subtract.



$$9 - 2 = \boxed{7}$$



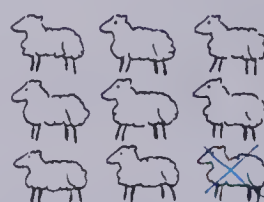
$$9 - 5 = \boxed{4}$$



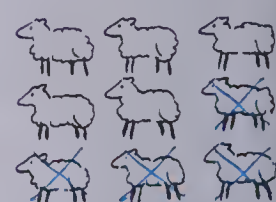
$$9 - 0 = \boxed{9}$$



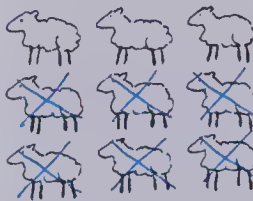
$$9 - 7 = \boxed{2}$$



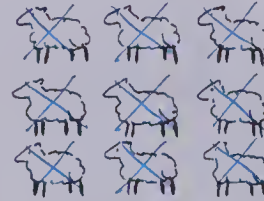
$$9 - 1 = \boxed{8}$$



$$9 - 4 = \boxed{5}$$



$$9 - 6 = \boxed{3}$$



$$9 - 9 = \boxed{0}$$



Subtract from 9

one hundred eleven 111

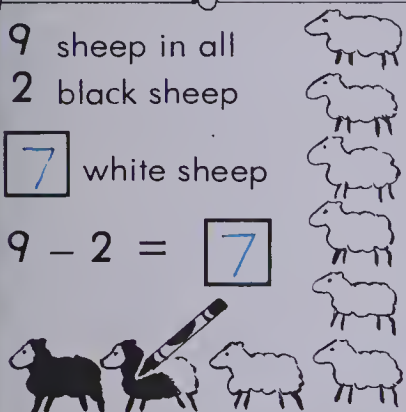
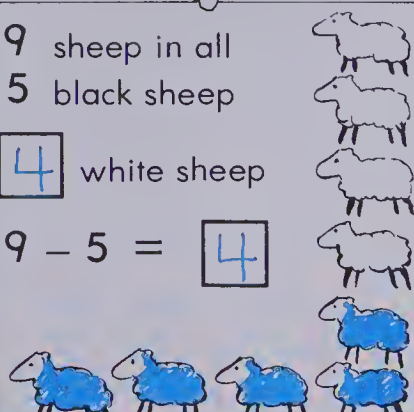
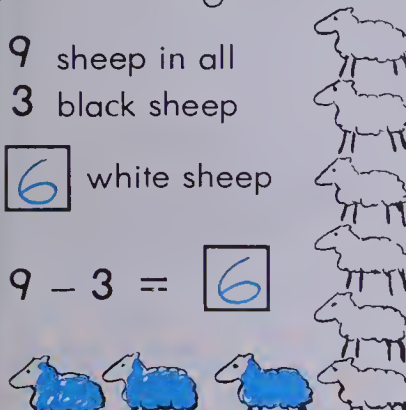
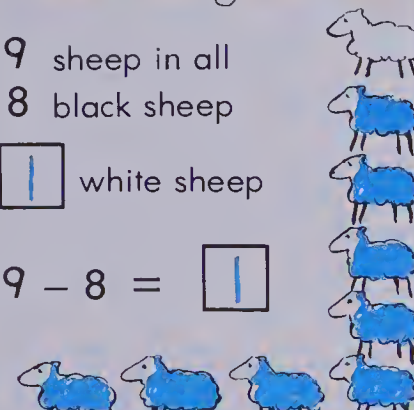
Using the Pages

- Provide an example of crossing out lost sheep before assigning page 111.
- Discuss the exercise at the bottom of page 112 and relate it to the lesson activity. Read and complete at least one of these examples with the students.

Subtract.


$\begin{array}{r} 9 \\ - 2 \\ \hline 7 \end{array}$	$\begin{array}{r} 9 \\ - 6 \\ \hline 3 \end{array}$	$\begin{array}{r} 9 \\ - 0 \\ \hline 9 \end{array}$	$\begin{array}{r} 9 \\ - 8 \\ \hline 1 \end{array}$	$\begin{array}{r} 9 \\ - 1 \\ \hline 8 \end{array}$
$\begin{array}{r} 9 \\ - 3 \\ \hline 6 \end{array}$	$\begin{array}{r} 9 \\ - 5 \\ \hline 4 \end{array}$	$\begin{array}{r} 9 \\ - 7 \\ \hline 2 \end{array}$	$\begin{array}{r} 9 \\ - 4 \\ \hline 5 \end{array}$	$\begin{array}{r} 9 \\ - 9 \\ \hline 0 \end{array}$

Colour. Subtract.

<p>9 sheep in all</p> <p>2 black sheep</p> <p>7 white sheep</p> <p><math>9 - 2 = \text{7}</math></p> 	<p>9 sheep in all</p> <p>5 black sheep</p> <p>4 white sheep</p> <p><math>9 - 5 = \text{4}</math></p> 
<p>9 sheep in all</p> <p>3 black sheep</p> <p>6 white sheep</p> <p><math>9 - 3 = \text{6}</math></p> 	<p>9 sheep in all</p> <p>8 black sheep</p> <p>1 white sheep</p> <p><math>9 - 8 = \text{1}</math></p> 


Reinforcement

1. Provide a stamp, stamp pad, and paper for students to stamp sets of nine, cross out subsets, and record matching subtraction sentences.



$9 - 2 = 7$

2. Give the students nine lima beans painted black on one side. Ask them to shake the beans, separate the black beans from the rest, and record a subtraction sentence for the situation.



$9 - 4 = 5$

Enrichment

1. Have students use the coloured Nine Cards from the lesson to try to print addition and subtraction sentences to make a *fact family*.

4

5

$4 + 5 = 9$	$9 - 4 = 5$
$5 + 4 = 9$	$9 - 5 = 4$





2. Encourage the students to learn the rhyme "Little Bo Peep."

Extra Practice

Worksheet A32

Colour. Subtract.

Pages 111-112

<p>9 stars</p> <p>Colour 6 stars red.</p> <p>6 red stars</p> <p><math>9 - 6 = \text{3}</math></p> 	<p>9 balls</p> <p>Colour 1 ball blue.</p> <p>1 blue ball</p> <p><math>9 - 1 = \text{8}</math></p> 
<p>9 hats</p> <p>Colour 7 hats brown.</p> <p>7 brown hats</p> <p><math>9 - 7 = \text{2}</math></p> 	<p>9 cars</p> <p>Colour 4 cars green.</p> <p>4 green cars</p> <p><math>9 - 4 = \text{5}</math></p> 

UNIT 6 LESSON 7

Objective A33

Subtract from 8 and 9.

Vocabulary

Starting set, subtraction sentence, subtraction name

Materials

Lima beans
Cup, paper plates, spoons
Cards in 5 different colours

Introducing the Lesson

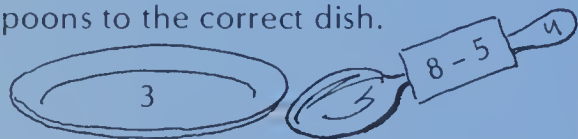
Put eight lima beans in a cup. Spill some of the beans in the cup onto a paper plate and ask the students to guess how many are still in the cup.



Count the beans in the cup to check. Record a subtraction sentence for the situation on the chalkboard. Give each student a turn to spill the beans and to record a matching subtraction sentence. Repeat, using nine lima beans. Emphasize the change in the starting set.

Teaching the Lesson

Put out paper plates labelled with the numerals from 0 to 9. Give each student a spoon with a subtraction name taped on it corresponding to the paper plates. Have the students match their spoons to the correct dish.



Prepare Eight Cards of five different colours in the same manner that the Nine Cards were done in the last lesson.



With the students, check each Eight Card to be sure the sides add up to 8. Have the students take turns trying to guess the hidden sides of the cards. Repeat, using the Nine Cards. Make sure the students know that you have changed to the Nine Cards. Keep the two sets of cards on display in paper holders.



Subtract.

$$\begin{array}{r} 8 \\ - 5 \\ \hline 3 \end{array}$$

$$\begin{array}{r} 9 \\ - 6 \\ \hline 3 \end{array}$$

$$\begin{array}{r} 8 \\ - 2 \\ \hline 6 \end{array}$$

$$\begin{array}{r} 9 \\ - 3 \\ \hline 6 \end{array}$$

$$\begin{array}{r} 8 \\ - 4 \\ \hline 4 \end{array}$$

$$\begin{array}{r} 9 \\ - 0 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 9 \\ - 9 \\ \hline 0 \end{array}$$

$$\begin{array}{r} 8 \\ - 7 \\ \hline 1 \end{array}$$

$$\begin{array}{r} 8 \\ - 0 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 9 \\ - 2 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 8 \\ - 8 \\ \hline 0 \end{array}$$

$$\begin{array}{r} 8 \\ - 3 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 9 \\ - 4 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 9 \\ - 7 \\ \hline 2 \end{array}$$

$$\begin{array}{r} 8 \\ - 1 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 8 \\ - 6 \\ \hline 2 \end{array}$$

$$\begin{array}{r} 9 \\ - 1 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 9 \\ - 8 \\ \hline 1 \end{array}$$

$$\begin{array}{r} 9 \\ - 5 \\ \hline 4 \end{array}$$



Subtract from 8 or 9

one hundred thirteen 113

Using the Pages

- Discuss the illustrations on pages 113 and 114. Provide counting materials for those students who need them as they do the subtractions.
- Help the students get started with the matching activity at the bottom of page 114.



Subtract.

$$9 - 9 = \boxed{0}$$

$$8 - 6 = \boxed{2}$$

$$9 - 2 = \boxed{7}$$

$$9 - 1 = \boxed{8}$$

$$8 - 8 = \boxed{0}$$

$$8 - 1 = \boxed{7}$$

$$9 - 5 = \boxed{4}$$

$$8 - 3 = \boxed{5}$$

$$9 - 8 = \boxed{1}$$

$$8 - 2 = \boxed{6}$$

$$9 - 6 = \boxed{3}$$

$$8 - 5 = \boxed{3}$$

$$9 - 7 = \boxed{2}$$

$$9 - 4 = \boxed{5}$$

$$8 - 7 = \boxed{1}$$

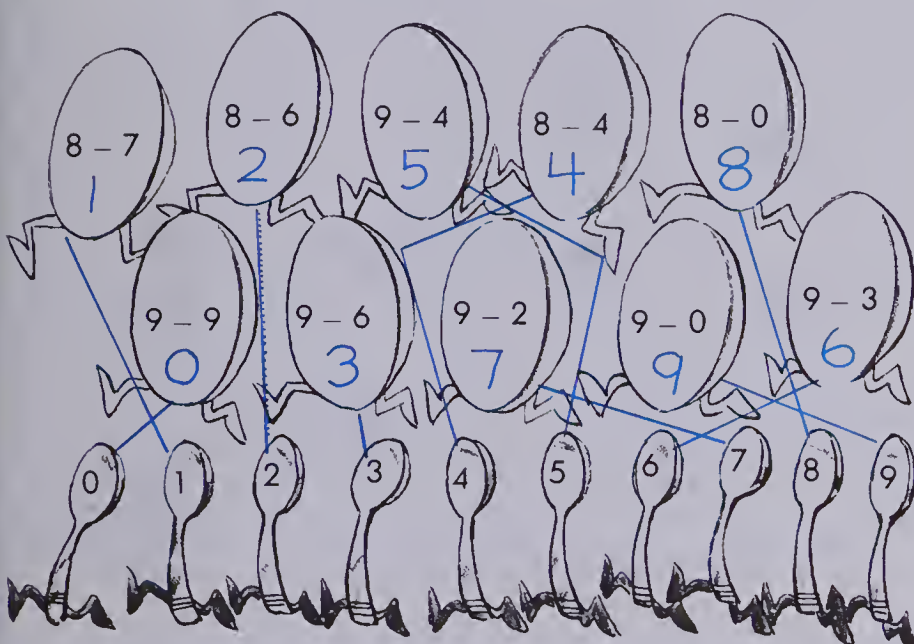
$$8 - 4 = \boxed{4}$$

$$8 - 0 = \boxed{8}$$

$$9 - 0 = \boxed{9}$$

$$9 - 3 = \boxed{6}$$

Subtract. Match.



114 one hundred fourteen

Subtract from 8 or 9

Reinforcement

1. Provide a 5 by 5 bingo card and beans for each student. Ask each student to fill the card with the numerals from 0 to 9. Call subtraction questions; have the students cover the answer on the card with a bean. Check each answer before calling the next question. The first student to get five beans in a row in any direction is the winner.

Sample bingo card

5	7	4	3	8
2	0	8	3	6
4	7	6	1	2
8	2	9	5	1
7	9	0	1	8

2. Provide eight or nine beans, a cup, a plate, and paper for students to "spill the beans", then record a subtraction sentence to describe what happened (as in the lesson activity).

Enrichment

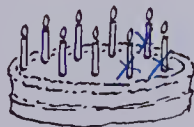
Provide a nursery rhyme book. Ask students to copy and illustrate the nursery rhymes used in Unit 6. Display the rhymes for all the students to read and discuss.

Extra Practice

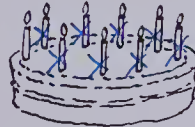
Cross out. Subtract.



$$8 - 6 = \boxed{2}$$



$$9 - 3 = \boxed{6}$$



$$9 - 8 = \boxed{1}$$



$$8 - 3 = \boxed{5}$$



$$9 - 4 = \boxed{5}$$



$$8 - 1 = \boxed{7}$$



$$9 - 2 = \boxed{7}$$



$$8 - 5 = \boxed{3}$$



$$9 - 0 = \boxed{9}$$

Worksheet A33

Pages 113-114

Objective A34
Subtract from numbers to 9.

Vocabulary
Count back, count on, subtraction names

Materials
Number line to 20
Paper plates
Subtraction Name Cards

Introducing the Lesson
Review counting forward and back on the number line. Give such directions as:

- a. "Start at fifteen. Count back three. What number do you land on?"
Twelve. "Fifteen minus three equals twelve."
- b. "Start at nine. Count on two. What number do you land on?" *Eleven. "Nine plus two equals eleven."*

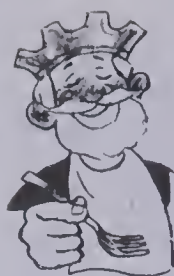
Teaching the Lesson
Set out paper plates labelled from 0 to 9. Tell the students you are trying to find subtraction names for these numbers. Take a Subtraction Name Card, e.g., $8 - 6$. Ask what $8 - 6$ is a name for. Put it on the plate. Repeat that $8 - 6$ is a name for 2. Do several other examples together. Give out cards to each student for sorting onto the paper plates.

When all the cards have been sorted, ask, "Which plate has the most cards? Which has the least?" Discuss why there are more names for 2 than names for 9 in the collection. "Are there other subtraction names for nine?" Ask a student to read out the subtraction names for 2. List them on the chalkboard. Discuss the difference between each pair of numbers.

	9 - 7	6 - 4	3 - 1
names for 2	8 - 6	5 - 3	2 - 0
	7 - 5	4 - 2	

Can any students think of other subtraction names for 2 (such as $12 - 10$, $15 - 13$, etc.)?

Subtract.



$$\begin{array}{r} 7 \\ - 6 \\ \hline 1 \end{array}$$

$$\begin{array}{r} 3 \\ - 0 \\ \hline 3 \end{array}$$

$$\begin{array}{r} 5 \\ - 4 \\ \hline 1 \end{array}$$

$$\begin{array}{r} 7 \\ - 3 \\ \hline 4 \end{array}$$

$$\begin{array}{r} 6 \\ - 3 \\ \hline 3 \end{array}$$

$$\begin{array}{r} 8 \\ - 6 \\ \hline 2 \end{array}$$

$$\begin{array}{r} 5 \\ - 2 \\ \hline 3 \end{array}$$

$$\begin{array}{r} 9 \\ - 3 \\ \hline 6 \end{array}$$

$$\begin{array}{r} 8 \\ - 1 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 8 \\ - 8 \\ \hline 0 \end{array}$$

$$\begin{array}{r} 9 \\ - 5 \\ \hline 4 \end{array}$$

$$\begin{array}{r} 6 \\ - 2 \\ \hline 4 \end{array}$$

$$\begin{array}{r} 7 \\ - 5 \\ \hline 2 \end{array}$$

$$\begin{array}{r} 6 \\ - 5 \\ \hline 1 \end{array}$$

$$\begin{array}{r} 5 \\ - 3 \\ \hline 2 \end{array}$$

$$\begin{array}{r} 7 \\ - 4 \\ \hline 3 \end{array}$$

$$\begin{array}{r} 9 \\ - 6 \\ \hline 3 \end{array}$$

$$\begin{array}{r} 8 \\ - 2 \\ \hline 6 \end{array}$$

$$\begin{array}{r} 7 \\ - 0 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 7 \\ - 1 \\ \hline 6 \end{array}$$

$$\begin{array}{r} 8 \\ - 3 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 7 \\ - 7 \\ \hline 0 \end{array}$$

$$\begin{array}{r} 9 \\ - 7 \\ \hline 2 \end{array}$$


$$\begin{array}{r} 8 \\ - 4 \\ \hline 4 \end{array}$$

$$\begin{array}{r} 4 \\ - 2 \\ \hline 2 \end{array}$$

$$\begin{array}{r} 9 \\ - 4 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 6 \\ - 4 \\ \hline 2 \end{array}$$

$$\begin{array}{r} 8 \\ - 5 \\ \hline 3 \end{array}$$



Subtraction facts to 9

one hundred fifteen 115

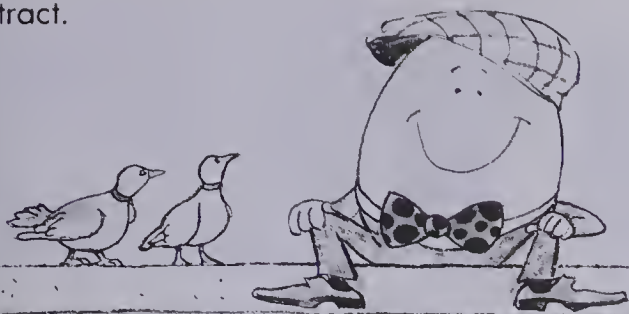
Using the Pages

- Point out the illustration on page 115. Read the nursery rhyme pictured to the class.

Sing a song of sixpence,
A pocket full of rye,
Four and twenty blackbirds
Baked in a pie.
When the pie was opened,
The birds began to sing.
Wasn't that a dainty dish
To set before the king?

Have the students count the blackbirds illustrated to match the number with the number of birds mentioned in the nursery rhyme.

- Page 115 provides a review of vertical subtraction.
- Discuss the rhyme illustrated on page 116. A horizontal subtraction review is provided on this page.



$5 - 3 = 2$	$8 - 2 = 6$	$6 - 3 = 3$
$4 - 2 = 2$	$7 - 4 = 3$	$3 - 2 = 1$
$6 - 5 = 1$	$9 - 3 = 6$	$5 - 5 = 0$
$7 - 7 = 0$	$8 - 1 = 7$	$6 - 0 = 6$
$5 - 1 = 4$	$9 - 7 = 2$	$8 - 6 = 2$
$6 - 4 = 2$	$7 - 3 = 4$	$8 - 3 = 5$
$9 - 5 = 4$	$5 - 2 = 3$	$7 - 5 = 2$
$8 - 0 = 8$	$9 - 8 = 1$	$6 - 2 = 4$
$7 - 6 = 1$	$8 - 5 = 3$	$9 - 0 = 9$
$5 - 4 = 1$	$9 - 4 = 5$	$8 - 4 = 4$

Reinforcement

- 1. Leave the paper plates out for individual students to practise sorting the Subtraction Name Cards.
- 2. Using two different-coloured blocks, make them into dice; mark one with the numerals from 4 to 9 and the other with 0, 1, 2, 3, 4. Provide pencils and paper, or use the chalkboard. Give each student a chance to roll both dice and call out a subtraction question using the two numbers. Remind them to start with the red dice (or whichever has the high numbers) and subtract the number from the other coloured die. The rest of the students record the example and answer it. Check each answer before rolling again.

Enrichment

- 1. Show the students how to match addition and subtraction sentences by acting out inverse situations.

$3 + 1 = 4$

$4 - 1 = 3$

Provide cards for matching.

$7 + 2 = 9$

$9 - 2 = 7$

- 2. Encourage the students to learn the nursery rhymes illustrated on pages 115 and 116.

Extra Practice

Worksheet A34
Pages 115-116

2

3 4

6-5 RED	3-1 BLUE	9-8 RED	4-2 BLUE	8-5 GRN.	9-7 BLUE	6-3 GRN.	8-6 BLUE
7-5 BLUE	8-8 YEL.	4-4 YEL.	1-0 RED	5-3 BLUE	9-5 BLK.	8-4 BLK.	5-2 GRN.
7-6 RED	9-7 BLUE	4-3 RED	8-6 BLUE	4-1 GRN.	2-0 BLUE	9-6 GRN.	6-4 BLUE

UNIT 6 LESSON 9

Objective A35

Add or subtract mixed examples to sums of 9.

Vocabulary

Plus, in all, minus, take any

Direction words: Watch the signs.

Match names for the same number.

Materials

Floor number line to 20

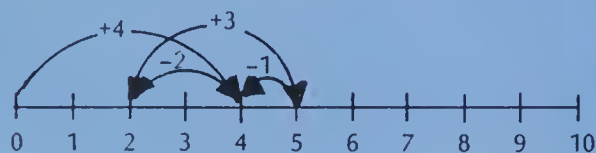
Addition Name Cards

Subtraction Name Cards

Introducing the Lesson

Show the students how to walk forward to add on with a floor number line, and how to go back to subtract. Choose a student to demonstrate. Give directions for the student to follow. "Start at zero. Add four; go forward four steps. Now, subtract two, go back two. Add three. Subtract one. Where are you?"

Repeat, using other students.



Teaching the Lesson

Mix up a set of Addition and Subtraction Name Cards. Show the cards to one student at a time, emphasizing that they must watch the sign before saying the answer.



$$\begin{array}{r} 4 \\ +4 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 6 \\ +3 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 3 \\ +4 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 1 \\ +7 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 2 \\ +6 \\ \hline 8 \end{array}$$

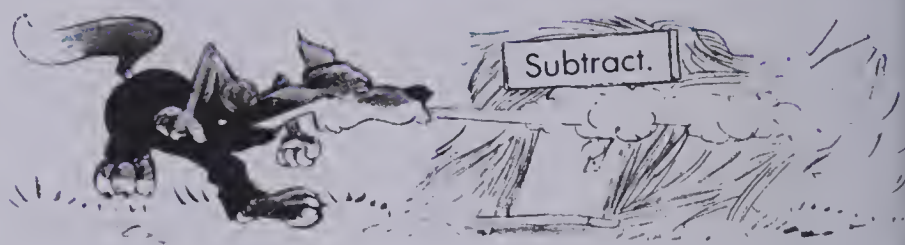
$$\begin{array}{r} 7 \\ +2 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 5 \\ +2 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 3 \\ +5 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 4 \\ +5 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 6 \\ +1 \\ \hline 7 \end{array}$$



$$\begin{array}{r} 6 \\ -3 \\ \hline 3 \end{array}$$

$$\begin{array}{r} 8 \\ -5 \\ \hline 3 \end{array}$$

$$\begin{array}{r} 9 \\ -3 \\ \hline 6 \end{array}$$

$$\begin{array}{r} 7 \\ -4 \\ \hline 3 \end{array}$$

$$\begin{array}{r} 8 \\ -2 \\ \hline 6 \end{array}$$

$$\begin{array}{r} 5 \\ -0 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 9 \\ -5 \\ \hline 4 \end{array}$$

$$\begin{array}{r} 7 \\ -6 \\ \hline 1 \end{array}$$

$$\begin{array}{r} 8 \\ -3 \\ \hline 5 \end{array}$$

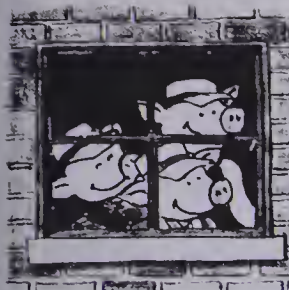
$$\begin{array}{r} 9 \\ -7 \\ \hline 2 \end{array}$$

Addition and subtraction facts to 9

one hundred seventeen 117

Using the Pages

- For page 117 and the top of 118, remind the students to watch the signs in order to decide whether to add or subtract.
- The exercise at the bottom of page 118 requires some extra thinking. Ask the students to find the names for all the shirts and write them under each shirt. They are to do the same for all the pants, then match names for the same number.



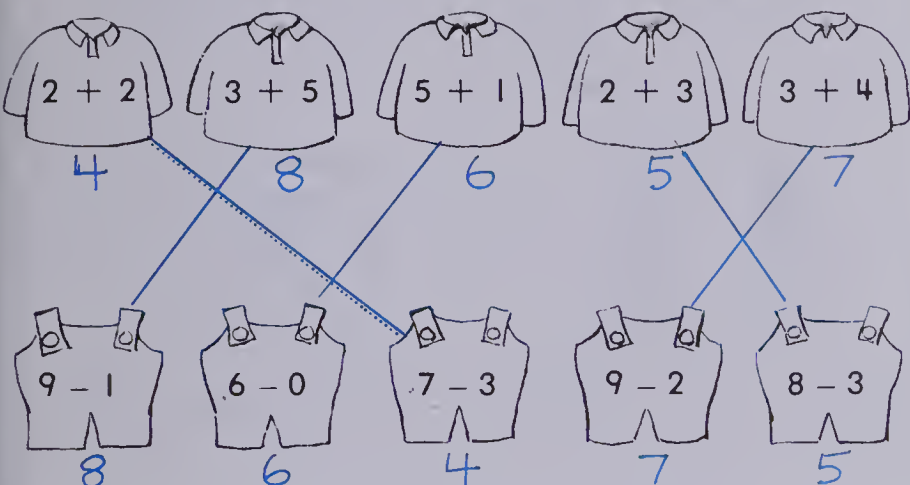
Add or subtract

Watch the signs.



$\begin{array}{r} 3 \\ +2 \\ \hline 5 \end{array}$	$\begin{array}{r} 6 \\ -5 \\ \hline 1 \end{array}$	$\begin{array}{r} 4 \\ +4 \\ \hline 8 \end{array}$	$\begin{array}{r} 6 \\ +1 \\ \hline 7 \end{array}$	$\begin{array}{r} 7 \\ -2 \\ \hline 5 \end{array}$
$\begin{array}{r} 5 \\ -3 \\ \hline 2 \end{array}$	$\begin{array}{r} 9 \\ +0 \\ \hline 9 \end{array}$	$\begin{array}{r} 8 \\ -7 \\ \hline 1 \end{array}$	$\begin{array}{r} 3 \\ +3 \\ \hline 6 \end{array}$	$\begin{array}{r} 9 \\ -5 \\ \hline 4 \end{array}$

Match names for the same number.



118 one hundred eighteen

Add or subtract

Reinforcement

1. Write the following puzzle on the chalkboard. Have a student complete it by filling in the missing numbers. Provide a worksheet of a similar question, or have students make their own puzzles for the others to try.

$$\begin{array}{r} 6 + 2 = \square \\ -3 \\ \hline \square + 4 = \square \\ -1 \\ \hline \square \end{array}$$

2. Prepare two dice, one labelled +, +, +, -, -, - and the other labelled with numerals from 1 to 6. Provide an egg carton and twelve blocks for each student. Each student starts with six blocks in the carton. Have the students take turns rolling the dice, telling the others what to do (add or subtract that number of blocks), then changing their set of blocks to suit the dice's directions. Whenever the student cannot complete a move (due to not having enough blocks to add or subtract), he or she must take some action, such as closing the lid and scrambling (shaking) the blocks, then start again with a set of six.

$\begin{array}{|c|c|} \hline + & 2 \\ \hline \end{array}$ "plus two" ($6 + 2 = 8$)
 $\begin{array}{|c|c|} \hline - & 5 \\ \hline \end{array}$ "minus five" ($8 - 5 = 3$)
 $\begin{array}{|c|c|} \hline + & 1 \\ \hline \end{array}$ "plus one" ($3 + 1 = 4$)
 $\begin{array}{|c|c|} \hline - & 6 \\ \hline \end{array}$ "minus six" — scrambled eggs

Enrichment

1. Have the students record "bus stop stories" for the others to interpret and solve.

"Three people on the bus. 3
 Two get off. $3 - 2$
 Four more get on. $3 - 2 + 4$
 One gets off. $3 - 2 + 4 - 1$
 Six get on. $3 - 2 + 4 - 1 + 6$
 How many on the bus now?" $3 - 2 + 4 - 1 + 6 = \square$

2. Have students make their own matching exercise similar to the one on page 118 (bottom), where addition and subtraction names for the same number are matched.

3. Read "The Three Little Pigs" to the class.

Extra Practice

Add or subtract. Watch the signs.

$\begin{array}{r} 6 \\ -3 \\ \hline 9 \end{array}$	$\begin{array}{r} 7 \\ -2 \\ \hline 5 \end{array}$	$\begin{array}{r} 8 \\ -7 \\ \hline 1 \end{array}$	$\begin{array}{r} 9 \\ +0 \\ \hline 9 \end{array}$	$\begin{array}{r} 5 \\ +3 \\ \hline 8 \end{array}$
$\begin{array}{r} 7 \\ -3 \\ \hline 4 \end{array}$	$\begin{array}{r} 8 \\ -2 \\ \hline 6 \end{array}$	$\begin{array}{r} 5 \\ +1 \\ \hline 6 \end{array}$	$\begin{array}{r} 4 \\ +4 \\ \hline 8 \end{array}$	$\begin{array}{r} 7 \\ -6 \\ \hline 1 \end{array}$
$\begin{array}{r} 8 \\ -1 \\ \hline 9 \end{array}$	$\begin{array}{r} 9 \\ -6 \\ \hline 3 \end{array}$	$\begin{array}{r} 4 \\ +5 \\ \hline 9 \end{array}$	$\begin{array}{r} 8 \\ -5 \\ \hline 3 \end{array}$	$\begin{array}{r} 3 \\ +3 \\ \hline 6 \end{array}$

Worksheet A35

Pages 117-118

UNIT 6 LESSON 10

Objective PS3

Interpret addition and subtraction picture problems.

Vocabulary

Starting set, add, subtract, number sentence

Materials

Plastic glasses
Paper plates
Crackers

Teaching the Lesson

The purpose of this lesson is to show in real life both addition and subtraction situations, emphasizing the starting set and which operation has taken place. For subtraction, it is particularly important to ask what was there at the start.

Give directions for the students to put out, say, five glasses of water. Then, direct a student to either empty some glasses or add more glasses of water. Ask the students what was there at the start, what happened, and what is there now. Record a number sentence to describe the situation.



$$5 - 2 = 3$$

$$4 - 1 = 3$$

Repeat the procedure using paper plates with crackers. Put one cracker on each of six plates. Have a student come and eat two crackers. Ask what happened and have the students try to record the number sentence.

You had 6 crackers to start. 6

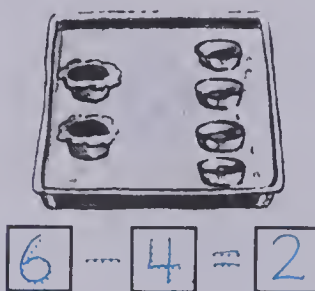
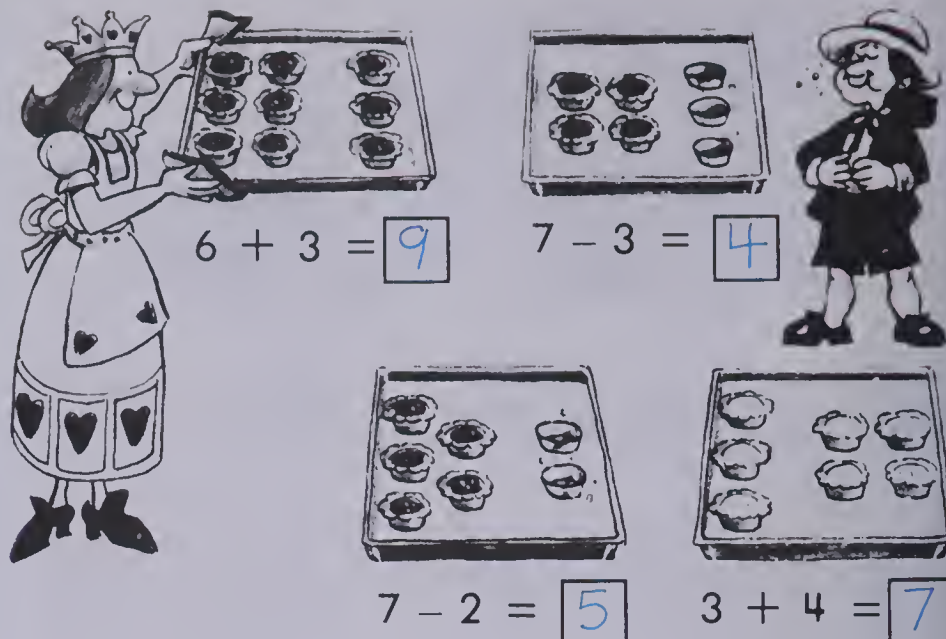
Jim ate 2 of them. $6 - 2$

Now there are four left. $6 - 2 = 4$

Use only one cracker per plate, as that idea ties into the pupil page where empty tart tins indicate subtraction.

Reinforcement

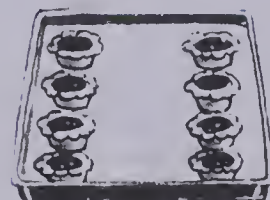
Provide more real-life practice with addition and subtraction situations for those having difficulty. Acting out activities similar to those illustrated on pages 44, 46, and 61-64 may also be useful.



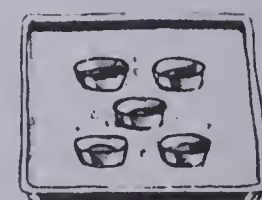
$$6 - 4 = 2$$



$$2 + 6 = 8$$



$$4 + 4 = 8$$



$$5 - 5 = 0$$

Add or subtract in problems

one hundred nineteen 119

Using the Pages

- Discuss the illustration on page 119. Do several, or all, examples orally with the students. Ask, "How many to start? What happened? Now how many?"

Problem Solving Activities

Assign Level 1, Unit 6

Add.

$\begin{array}{r} 3 \\ +4 \\ \hline 7 \end{array}$	$\begin{array}{r} 2 \\ +7 \\ \hline 9 \end{array}$	$\begin{array}{r} 5 \\ +3 \\ \hline 8 \end{array}$	$\begin{array}{r} 1 \\ +7 \\ \hline 8 \end{array}$	$\begin{array}{r} 2 \\ +5 \\ \hline 7 \end{array}$	$\begin{array}{r} 4 \\ +5 \\ \hline 9 \end{array}$
--	--	--	--	--	--


Subtract.

$\begin{array}{r} 9 \\ -3 \\ \hline 6 \end{array}$	$\begin{array}{r} 7 \\ -6 \\ \hline 1 \end{array}$	$\begin{array}{r} 9 \\ -0 \\ \hline 9 \end{array}$	$\begin{array}{r} 8 \\ -4 \\ \hline 4 \end{array}$	$\begin{array}{r} 7 \\ -3 \\ \hline 4 \end{array}$	$\begin{array}{r} 8 \\ -6 \\ \hline 2 \end{array}$
--	--	--	--	--	--

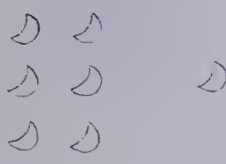
Add or subtract.

$\begin{array}{r} 6 \\ +1 \\ \hline 7 \end{array}$	$\begin{array}{r} 8 \\ -2 \\ \hline 6 \end{array}$	$\begin{array}{r} 3 \\ +6 \\ \hline 9 \end{array}$	$\begin{array}{r} 7 \\ -5 \\ \hline 2 \end{array}$	$\begin{array}{r} 4 \\ +4 \\ \hline 8 \end{array}$	$\begin{array}{r} 9 \\ -1 \\ \hline 8 \end{array}$
--	--	--	--	--	--

Print a number sentence for each picture.


$$\boxed{8} - \boxed{3} = \boxed{5}$$


$$\boxed{5} + \boxed{4} = \boxed{9}$$


$$\boxed{6} + \boxed{1} = \boxed{7}$$


$$\boxed{8} - \boxed{4} = \boxed{4}$$

120 one hundred twenty

Unit 6 Test

Informal Assessment

1. Addition and Subtraction

Use flashcards for facts to sums of 9.

Check each student individually using several addition and several subtraction combinations. Allow a student as much time as he or she requires to solve each combination and answer orally.

Have counters available. Observe and record responses for each student.

a. Does the child quickly respond correctly to most or all combinations? If so, the child is most likely working at the recall level and should be ready for more facts (Unit 7: Facts to 10) and for increased emphasis on speed of recall.

b. Does the child reason out a sum or difference by using known facts?

$4 + 4 = 8$, so $4 + 5 = 9$

c. Does the child count on or back mentally?

For (b) and (c) these children should continue working with combinations to 9 in conjunction with introduction to facts for 10. Encourage grouping and using known facts. Minimize emphasis on speed.

d. Does the child require counters (fingers or objects) to model both subsets for addition, or the starting set for subtraction? Does the child then count from one up to the total? These children need a slower pace of introduction of new facts. Provide a variety of counters for students to use. Work individually with these students to develop counting-on and set/subset relationships.

2. Numeral Printing Skills

Observe students as they record numerals 0 to 9. Is each numeral properly formed?

3. Interpreting Picture Problems

Ask students individually to interpret illustrated addition and subtraction situations orally. This is particularly important for subtraction where the illustration of a starting set is difficult. Ensure that students can recognize:

- (1) How many were there to begin with. (the whole)
- (2) How many were subtracted (crossed out, taken away, eaten, ...)?
- (3) How many are left. For addition situations, can the student recognize the parts and the whole?

UNIT 6

TEST

Test 1: Solve vertical addition to 9.

Test 2: Solve vertical subtraction to 9.

Test 3: Solve mixed addition and subtraction to 9.

Test 4: Write an addition or subtraction sentence for a pictured situation.

UNIT 7

Addition and Subtraction to 10; Numerals to 20

Theme: Transportation

Lesson		Objective	Pages
1	A36	Add to sums of 10.	121-122
2	A37	Subtract from 10.	123-124
3	PS4	Interpret and illustrate simple word/picture problems.	125-126
4	N20	Identify a group of ten, and leftovers.	127-128
5	N21	Associate two-digit numerals to 19 with a group of ten and leftover ones.	129-130
6	N22	Identify and compare sets to 13.	131-132
7	N23	Identify and compare sets to 19.	133-134
8	N24	Compare numbers to 19; review addition and subtraction facts to 10.	135-136
9	N25	Identify and order numbers to 20.	137-138
10	N26	Order numbers to 20.	139
Test		Addition and subtraction to 10; Numerals to 20	140

Vocabulary

tally	tens
fives	ones
addition name	separate
break off	subtraction sentence
count on	number sentence
in all	add
take away	subtract
sets of ten	leftovers
count by ten	count on from ten
compare	more
less	equal
greater	lesser
twenty	in order

Printed Directions:

Print how many are left over.
Which is greater?
Fill in the missing numerals.

Materials

Numeral Cards for Teacher (T) and Pupil* (P)

0 to 20

Addition Name Cards to 10

7 + 3

Subtraction Name Cards to 10

10 - 6

Tens and Ones Cards (provided in this Teacher's Resource Book)

10 12 cm × 9 cm
0 to 9 6 cm × 9 cm

Multiples of Ten Cards

0 to 100

Number line to 100

Blank cards

Interlocking cubes

Wooden blocks

Egg cartons

Dimes and pennies*

Bingo chips*

Large-square graph paper

Feltboard

Felt cutouts

Newspapers

Crayons

Counters

Beans


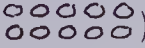
*Available in Houghton Mifflin K-2 Activity Kit.

About This Unit

Unit 7 is all about ten: addition names for ten; subtracting from ten; finding groups of ten and then identifying leftovers; counting, comparing, and ordering numbers between 10 and 20.

An introduction to two-digit numbers and place value is provided by associating groups of tens and ones with familiar counting sequences.

The concept of many-to-one correspondence essential to an understanding of place value is developed through having opportunities for students to

1. find and circle a group of ten, then count on to find the total; and
2. recognize a grouped ten ( ) and count on the ones. For students who are not yet able to recognize and/or utilize groups, all examples involve illustrations where students can count from one up to the total.

A prerequisite to this unit is experience with sets of ten to twenty objects, grouping these objects, and orally describing the grouping. "I have a group of ten and three more ... thirteen in all." Such experiences were suggested through the Activity Centre activities for Unit 6, described in the unit introduction. In particular, activities such as "Stamp and Count" and "Count and Tally" should be available for use with this unit as well. Further activities with sets of up to 20 objects are provided in the Introducing the Lesson and Teaching the Lesson sections throughout this unit and in the Reinforcement and Enrichment sections for each lesson.

The printing of the numerals from 10 to 19 is then associated with the idea of a group of ten and leftovers. Students are encouraged to say clues to themselves, such as, "Sixteen, that's ten and six," as they record a one and a six. A common reversal, caused by verbal miscues, is for the student to print 61 as he says "six-teen". Often a verbal pattern such as "ten and six" can overcome this reversal pattern.

Several exercises in the workbook encourage students to look at groups of from ten to nineteen objects as a group of ten and leftovers. Workbook exercises involving the comparison of two groups at first illustrate grouped tens and leftovers; these are followed by unillustrated examples.

The first several lessons focus on names for ten and addends that go together to make ten. This emphasis will be maintained throughout the basic fact units, because it is essential to the reasoning pattern involved in finding sums greater than ten, e.g., $(5 + 5) + 1$. The idea of joining subsets to make a ten provides to the students' intuition an introduction to the associative property of addition. This property is not fully developed at the grade 1 level, but will be in subsequent grades.

Activity Centre

Time and Sequence

Organize a Time and Sequence Centre since an awareness of these concepts is not developed overnight in young children. Many time and sequence experiences over a number of years will contribute to their full understanding. Simple activities, such as referring to the clock

throughout the day, time activities, planning ahead, or looking back on the calendar can help to develop their awareness and understanding. This centre presents a collection of some simple activities and helps to introduce the students to some ideas about time that are developed in Unit 8.

Some students come to school with a fair knowledge of the days of the week, of how to tell time, etc., while others seem oblivious to these concepts. You will need to adapt the following suggestions to meet the needs of your particular class of individuals.

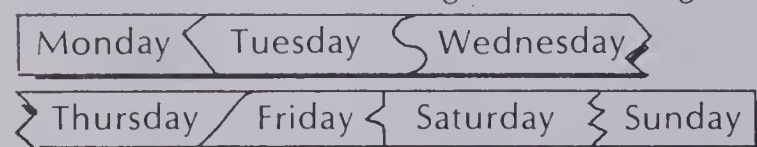
The Calendar

If you are not already in the habit of using a calendar daily, start now! Use a large enough chart so that it can be read from a distance. Introduce it to the students. Discuss the months, weeks, and days. Birthdays, holidays, school days, community and school events can be recorded on it. Count how many days until various events. Counting, ordering (before and after), patterns, and multiples all can be developed through regular reference to it.

If students are comfortable reading and interpreting the calendar, you might try making individual calendars. On page 159 at the end of Unit 8 a calendar format is provided.

Days of the Week

Introduce the order of the days of the week. Practise the oral recitation of the sequence. You may choose to make flash cards that the students can order. Use shapes and initial sounds as clues to ordering and decoding.



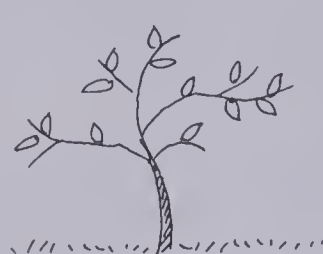
Months of the Year

Similarly, introduce the sequence of months. Have a contest to see who can remember the order. Make a wall reference chart for the months. Associate holidays with particular months. Make a birthday chart to show which children have birthdays in that month.

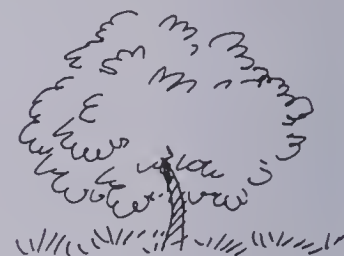


Seasons

Classifying and sequencing skills can be developed through discussing and sorting picture cards related to seasons. Collect pictures that are identified with particular seasons. Through oral discussion, have the students decide which pictures depict each of the four seasons. Use a sequence of growing things to discuss how the seasons follow each other.



Spring



Summer



Fall



Winter

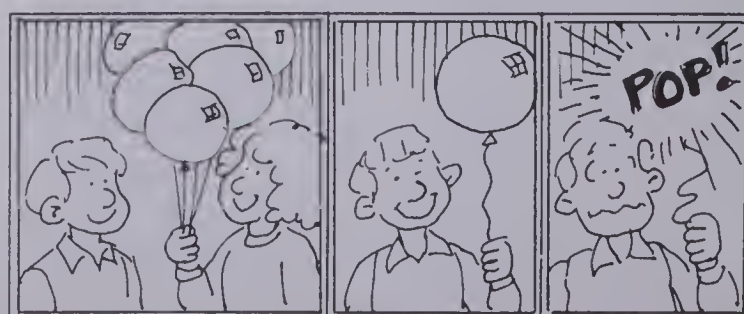
Timing

How long is a second? a minute? an hour? To develop such awareness in students use a timer. Set time limits. Refer regularly to how long it takes to complete a task, or how many minutes until an event, such as gym period.

Ask, "How many blocks can you join in 30 seconds?" Try it. Tally the results and compare them. Do the same for such activities as writing a sequence of numerals and skipping rope.







Story Sequence

Look for sequence cards that tell a logical story when ordered correctly. These can be made from comic strips or by the students as they recount a favourite story and draw pictures to illustrate it. Use these with a group of students to begin. Later the sets can be used with pairs of students, or with the individual pupil.



Daily Calendar

Use events from the day for ordering activities. Cards describing the plans for the day can be ordered, or make a list on the chalkboard. Illustrations can clarify unfamiliar word meanings. Make a plan in the morning. Discuss it throughout the day. When is recess? How much time between reading and arithmetic? Review it at the end of the day. Did we have to change our plan? Are there other things we could record?

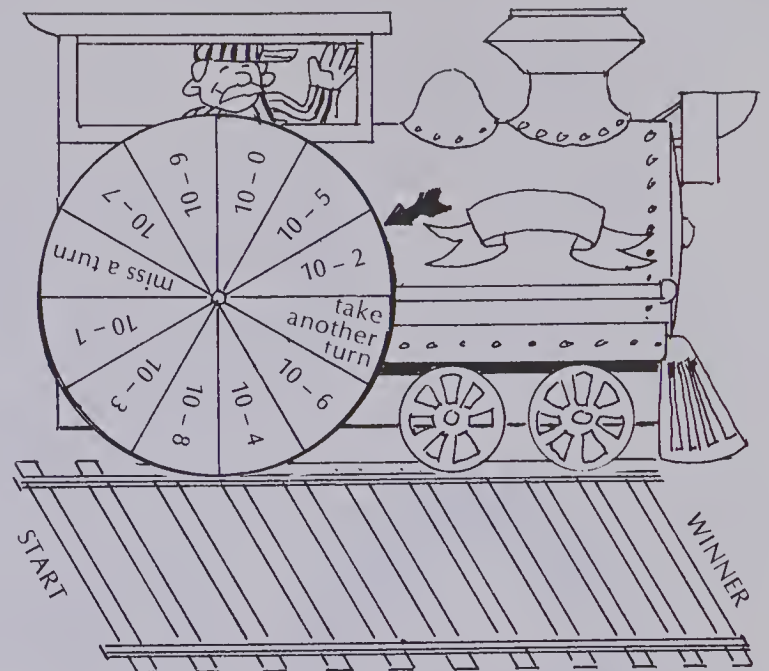
Reading	
Arithmetic	$\begin{array}{r} 2 \\ + 2 \\ \hline \end{array}$
Gym	
Lunch	
Assembly	
Science	
Art	

Ideas

Use the transportation theme for reinforcement games.

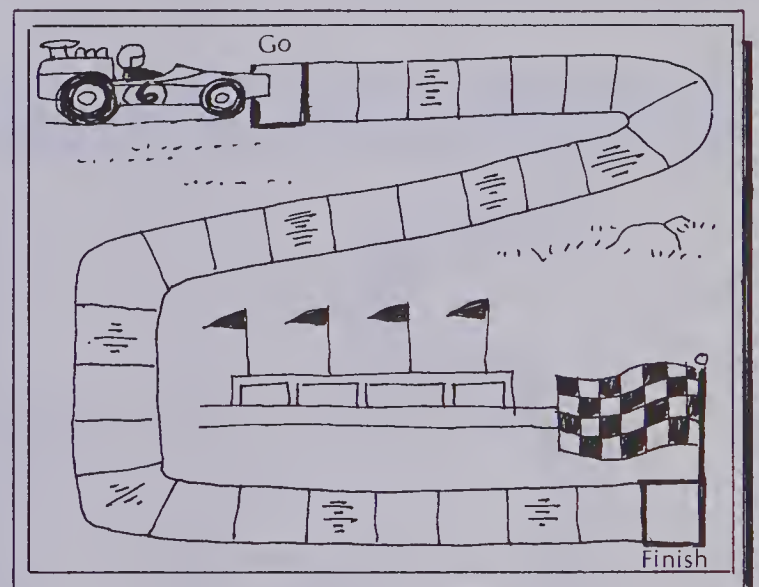
1. "Train Tracks"

Using poster board as the game board, make a spinner from a paper clip and a brass brad. Draw a train with subtraction questions on the rear wheel. Players move one space along the track if they can provide the answer quickly and correctly. At first, allow players to find the difference by counting, but encourage them to try for speed by using recall. Provide two spaces on the spinner wheel for "wild cards", such as "miss a turn" or "take two turns".



2. "Race Track"

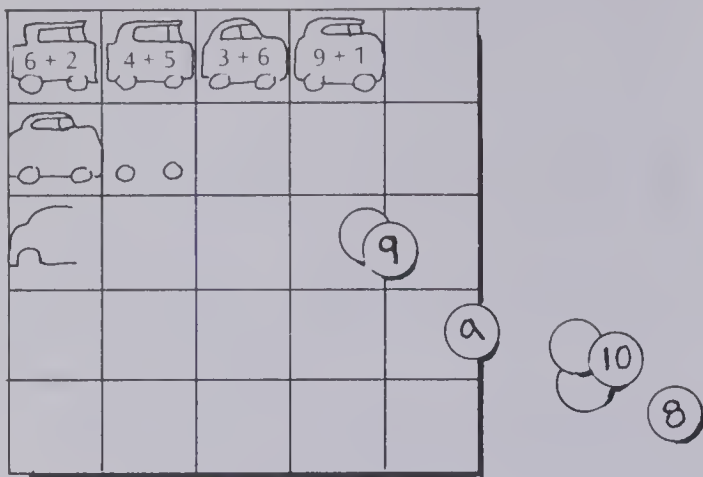
Use a race track game board, small toy cars as markers, and a deck of addition and/or subtraction name cards. Each player turns a card, finds the sum or difference and moves that number of spaces. Mark several spaces with hazards for missing a turn or going back or forward several spaces, such as: flat tire—go back 3; out of gas—miss a turn; pass a car—go ahead 2.



3. "Parking Lot"

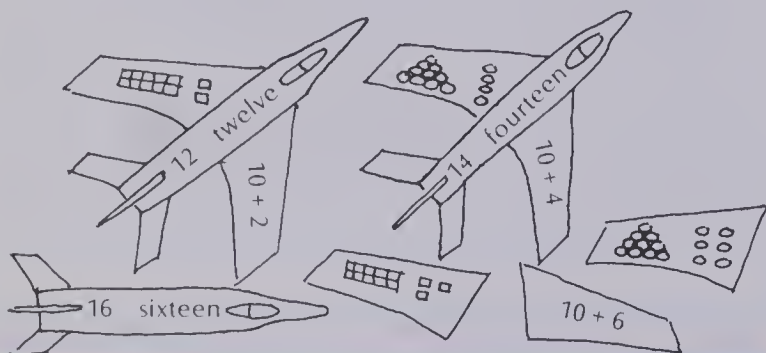
Have the students each draw a car in one square. Use a felt pen to put an addition or subtraction name on each car. Print the numerals from 0 to 10 on 50 or 60 bingo chips. Each player draws a chip and tries to cover a car with a corresponding name until one player has covered a row of cars. If the drawn chip does not match, it is returned to the pile and the next player takes a turn.

Parking Lot



4. "Airplane Parts"

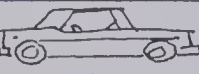
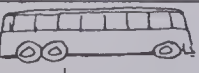
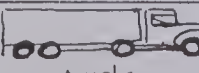

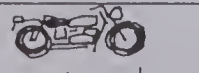
Make a matching game for the numbers from 10 to 20 using the body and wings of airplanes. Record the numeral and the number word on the body, an illustration of the number on one wing, and the expanded name of the number on the other wing.



The transportation theme can also be brought out in the following graphing activities.

1. Traffic Tally

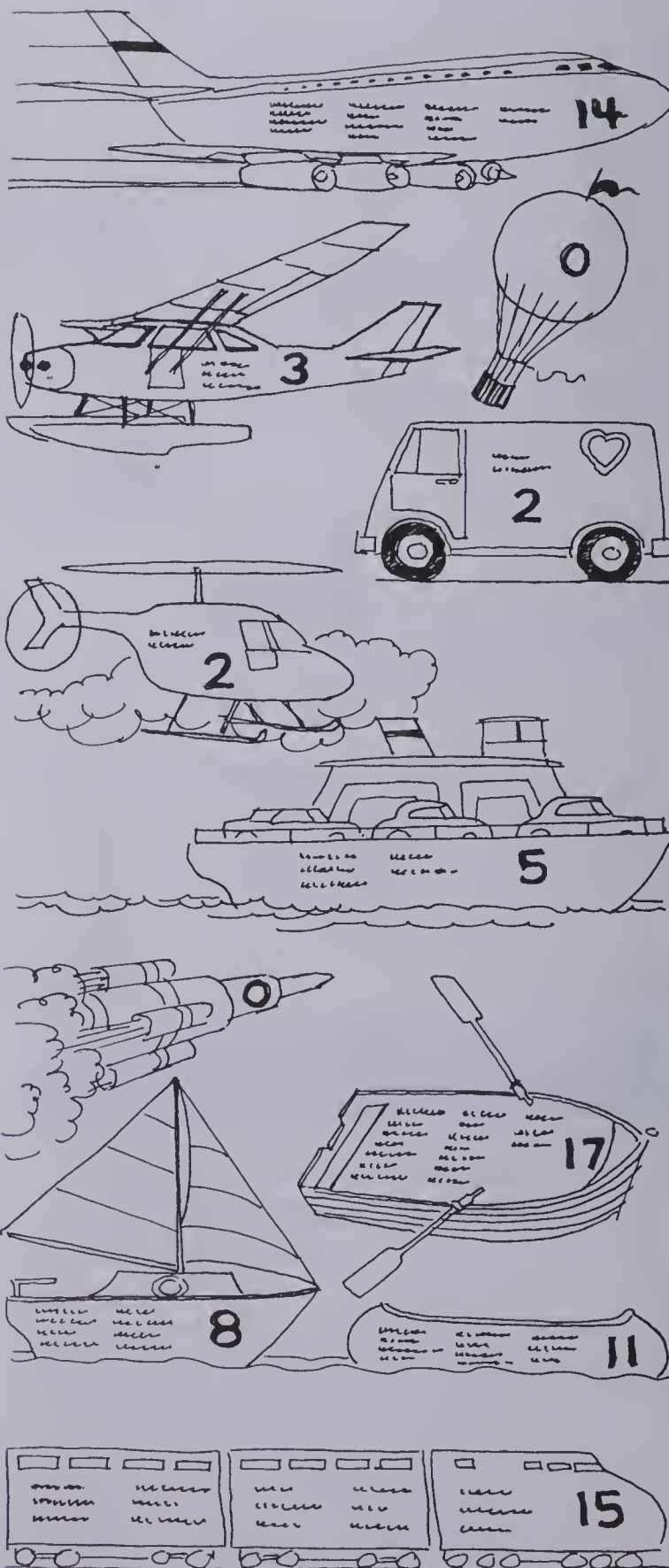
Let the students take turns watching and tallying the number of cars, trucks, vans, buses, etc. that pass the school in a given period of time. Provide each pupil with a worksheet listing the kinds of vehicles. Review the tallying procedure |||| |||| for making fives and grouping tens. Have them record totals. Use the various responses for comparisons in a general discussion.

 cars	 111	23
 buses	1	1
 trucks	 11	12
 vans	 1	6
 motorcycles	111	3

2. Travel Graph

With the students, make a large mural of all the different types of vehicles they know. Leave space for them to print their names or glue pictures of themselves on all the types of vehicles they have ridden. Record totals for each and use these totals for comparisons and discussion.

Vehicles We Have Used



Ten and Ones Cards

0

1

2

3

4

5

Ten and Ones Cards

6

7

8

9

1

0

Name _____

Pretest

Unit 7

Add.

$$\begin{array}{r} 1 \\ + 9 \\ \hline 10 \end{array}$$

$$\begin{array}{r} 5 \\ + 2 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 3 \\ + 7 \\ \hline 10 \end{array}$$

$$\begin{array}{r} 5 \\ + 5 \\ \hline 10 \end{array}$$

Subtract.

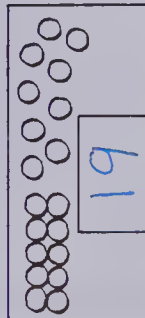
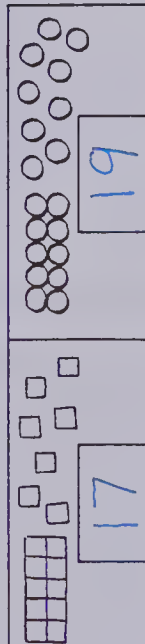
$$\begin{array}{r} 10 \\ - 4 \\ \hline 6 \end{array}$$

$$\begin{array}{r} 10 \\ - 6 \\ \hline 4 \end{array}$$

$$\begin{array}{r} 10 \\ - 8 \\ \hline 2 \end{array}$$

$$\begin{array}{r} 10 \\ - 3 \\ \hline 7 \end{array}$$

How many in all?



Count.



Which is greater?

13 15

17 12

14 16

20 10

<p>5 big ants 4 little ants</p> <p>5 + 4 = <u>9</u></p> <p><u>9</u> ants in all</p>	<p>10 birds 3 fly away.</p> <p>10 - 3 = <u>7</u></p> <p><u>7</u> birds are left.</p>
---	--

Name _____

Post-test

Unit 7

Add.

$$\begin{array}{r} 4 \\ + 6 \\ \hline 10 \end{array}$$

$$\begin{array}{r} 9 \\ + 1 \\ \hline 10 \end{array}$$

$$\begin{array}{r} 3 \\ + 5 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 2 \\ + 8 \\ \hline 10 \end{array}$$

$$\begin{array}{r} 4 \\ + 5 \\ \hline 9 \end{array}$$

Subtract.

$$\begin{array}{r} 10 \\ - 7 \\ \hline 3 \end{array}$$

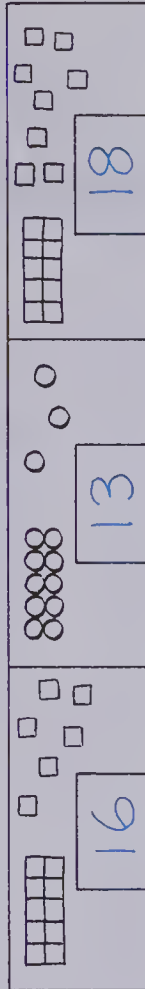
$$\begin{array}{r} 10 \\ - 5 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 10 \\ - 2 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 10 \\ - 4 \\ \hline 6 \end{array}$$

$$\begin{array}{r} 10 \\ - 8 \\ \hline 2 \end{array}$$

How many in all?



Count.



Which is greater?

14 15

19 11

20 18

12 17

<p>5 big apples 5 little apples</p> <p>5 + 5 = <u>10</u></p> <p><u>10</u> apples in all</p>	<p>10 cookies 5 are eaten.</p> <p>10 - 5 = <u>5</u></p> <p><u>5</u> cookies are left.</p>
---	---

UNIT 7 LESSON 1

Objective A36

Add to sums of 10.

Vocabulary

Tally, tens, fives, ones, addition name

Materials

10 toy boats
Blank cards
Addition Name Cards

Introducing the Lesson

Ask the students to name as many kinds of boats as possible. List these on the chalkboard. Explain how to make a tally (HH) to represent a number. Ask how many students have been on each type of boat. Record the number using tally marks. Once all types have been tallied, compare results for each type of boat. Count by fives and ones to find how many for each. Circle sets of tens and ones. Count by tens and ones. Record how many in all.

sailboat HHH HHH II

Five, ten, eleven, twelve.

12

Ten, eleven, twelve.

Teaching the Lesson

Display ten toy boats. Ask a student to come up and arrange the boats into two groups. Match an Addition Name Card to the arrangement of boats and display the card. Repeat the procedure until all eleven addition names for 10 have been found. Give the students a chance also to read a Name Card and arrange the boats to match the card.



Play a finger game for sums of 10. Call a number less than 10. Have the students hold up that number of fingers and tell how many fingers are still down. Then they count to check. Record an open addition sentence while the students are checking, for example, $3 + \square = 10$. Have a student fill in the missing number of fingers.



Print names for 10.



$$3 + 7 = 10$$

$$7 + 3 = 10$$

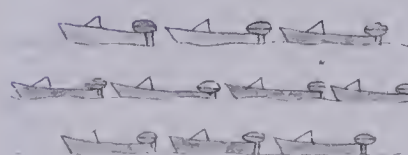


$$4 + 6 = 10$$

$$6 + 4 = 10$$

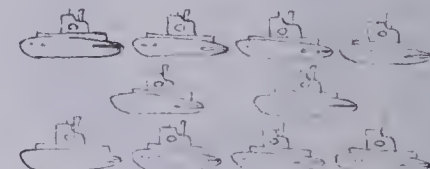


$$5 + 5 = 10$$



$$2 + 8 = 10$$

$$8 + 2 = 10$$



$$1 + 9 = 10$$

$$9 + 1 = 10$$

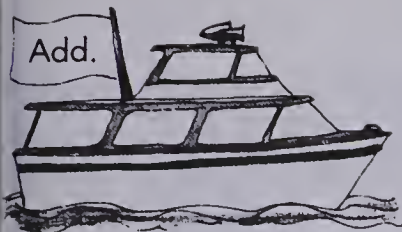
10 10 ten 10 ten 10 ten

Sums to 10

one hundred twenty-one 121

Using the Pages

- Page 121 requires the students to write pairs of related addition sentences for an illustration. Help them get started with this activity using chalkboard examples. Emphasize the two subsets in an illustration. Read them from right to left and from left to right to develop the pair of related addition sentences.
- Have the students practise reading and printing the sight word "ten" as they print the numeral ten at the bottom of page 121. Recognition of the word "ten" is required for later lessons.
- Page 122 is a drill of vertical addition facts with sums to 10.



$$\begin{array}{r} 5 \\ + 5 \\ \hline 10 \end{array}$$

$$\begin{array}{r} 6 \\ + 2 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 5 \\ + 4 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 7 \\ + 3 \\ \hline 10 \end{array}$$

$$\begin{array}{r} 4 \\ + 6 \\ \hline 10 \end{array}$$

$$\begin{array}{r} 2 \\ + 7 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 6 \\ + 4 \\ \hline 10 \end{array}$$

$$\begin{array}{r} 4 \\ + 4 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 1 \\ + 8 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 8 \\ + 2 \\ \hline 10 \end{array}$$

$$\begin{array}{r} 0 \\ + 10 \\ \hline 10 \end{array}$$

$$\begin{array}{r} 9 \\ + 1 \\ \hline 10 \end{array}$$

$$\begin{array}{r} 6 \\ + 3 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 2 \\ + 8 \\ \hline 10 \end{array}$$

$$\begin{array}{r} 3 \\ + 5 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 7 \\ + 2 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 3 \\ + 7 \\ \hline 10 \end{array}$$

$$\begin{array}{r} 10 \\ + 0 \\ \hline 10 \end{array}$$

$$\begin{array}{r} 6 \\ + 4 \\ \hline 10 \end{array}$$

$$\begin{array}{r} 4 \\ + 5 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 1 \\ + 9 \\ \hline 10 \end{array}$$

$$\begin{array}{r} 2 \\ + 6 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 4 \\ + 3 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 3 \\ + 6 \\ \hline 9 \end{array}$$

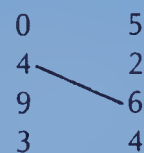
$$\begin{array}{r} 5 \\ + 5 \\ \hline 10 \end{array}$$

$$\begin{array}{r} 8 \\ + 1 \\ \hline 9 \end{array}$$



Reinforcement

1. Make two lists of numbers from 0 to 10 in mixed order. Ask the students to draw a line between two numbers, one from each list, that add to 10.



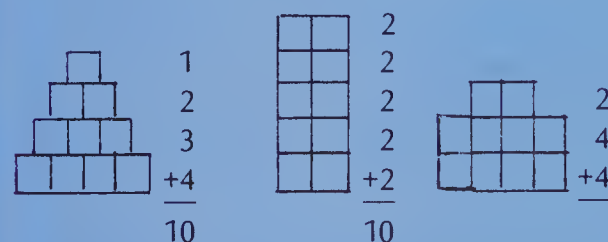
2. Provide stickers and cards for the students to make sets of ten using two different colours. When the sets are finished, they can match them to Addition Name Cards.



3. Show the students how to play "Ten Down". Use a deck of cards with the face cards removed. Deal seven cards to each of two, three, or four players. The students can put down any pairs that add to 10. Then each student takes a turn picking up a card from the centre. If it adds to 10, the pair is put down on the table with the rest of the student's pairs that add to 10. The game ends when either a student or the centre pile runs out of cards. The winner is the student with the most cards down on the table.

Enrichment

Provide blocks, paper, and pencils. Ask each student to stack ten blocks in as many ways as they can think of, record how many on each level, and then draw the stack. A vertical addition can then be recorded.



Extra Practice

Worksheet A36

Pages 121-122

Print names for 10.

○○○○○○○○ ○○○○ ○○○○○○○○○ ○○

$$6 + 4 = 10$$

$$4 + 6 = 10$$

$$8 + 2 = 10$$

$$2 + 8 = 10$$

△ △△△△△△△△△

$$1 + 9 = 10$$

$$9 + 1 = 10$$

△△△ △△△△△△△△

$$3 + 7 = 10$$

$$7 + 3 = 10$$

Objective A37

Subtract from 10.

Vocabulary

Separate, break off, subtraction sentence, count on

MaterialsInterlocking cubes
Blank cards**Introducing the Lesson**

Provide each student with ten interlocking cubes joined to make a train. Tell them how many blocks (train cars) to separate or break off and drive away. Ask how many cars are left. Record a subtraction sentence for each example. Repeat until all subtraction examples from 10 have been recorded. Point out pairs of related subtraction sentences.

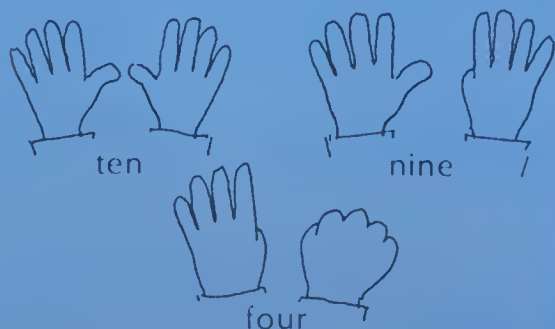
$10 - 0 = 10$

$10 - 10 = 0$

Teaching the Lesson

Make a set of Ten Cards as in previous units. Explain that both sides of the card must add to ten. Write the number 3 on one side of the card and ask what must go on the other side. Make cards for all the addition facts to 10: 0,10; 1,9; 2,8; 3,7; 4,6; 5,5. Ask how the cards can be used for subtraction. Play a guessing game by spreading out the cards and having the students guess the hidden number. Store and display the cards in a special ten holder.

Have the students use their fingers to do subtraction from 10 examples. Call, "Ten minus two." The students put down two fingers and tell how many are left. Practise recognizing finger sets without having to count.



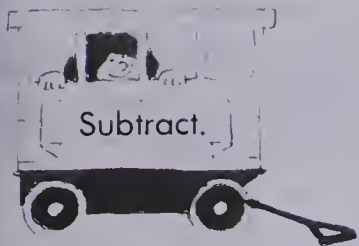
Subtract.

$\begin{array}{r} 10 \\ - 4 \\ \hline 6 \end{array}$	$\begin{array}{r} 10 \\ - 1 \\ \hline 9 \end{array}$	$\begin{array}{r} 10 \\ - 3 \\ \hline 7 \end{array}$	$\begin{array}{r} 10 \\ - 8 \\ \hline 2 \end{array}$	$\begin{array}{r} 10 \\ - 5 \\ \hline 5 \end{array}$
$\begin{array}{r} 10 \\ - 0 \\ \hline 10 \end{array}$	$\begin{array}{r} 10 \\ - 2 \\ \hline 8 \end{array}$	$\begin{array}{r} 10 \\ - 10 \\ \hline 0 \end{array}$	$\begin{array}{r} 10 \\ - 6 \\ \hline 4 \end{array}$	$\begin{array}{r} 10 \\ - 7 \\ \hline 3 \end{array}$

Subtraction from 10

Using the Pages

- The ten numbered train cards at the top of page 123 can be used by the students as they do the vertical and horizontal subtraction questions. Show them how to cover and count on to ten, as in the lesson, to solve the subtraction.
- Page 124 provides mixed subtraction practice for the numbers up to 10.



$$\begin{array}{r} 10 \\ - 6 \\ \hline 4 \end{array}$$

$$\begin{array}{r} 9 \\ - 5 \\ \hline 4 \end{array}$$

$$\begin{array}{r} 8 \\ - 2 \\ \hline 6 \end{array}$$

$$\begin{array}{r} 10 \\ - 4 \\ \hline 6 \end{array}$$

$$\begin{array}{r} 9 \\ - 4 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 8 \\ - 3 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 10 \\ - 7 \\ \hline 3 \end{array}$$

$$\begin{array}{r} 9 \\ - 8 \\ \hline 1 \end{array}$$

$$\begin{array}{r} 8 \\ - 4 \\ \hline 4 \end{array}$$

$$\begin{array}{r} 10 \\ - 3 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 10 \\ - 5 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 9 \\ - 3 \\ \hline 6 \end{array}$$

$$\begin{array}{r} 8 \\ - 5 \\ \hline 3 \end{array}$$

$$\begin{array}{r} 10 \\ - 2 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 9 \\ - 2 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 7 \\ - 3 \\ \hline 4 \end{array}$$

$$\begin{array}{r} 9 \\ - 4 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 10 \\ - 8 \\ \hline 2 \end{array}$$

$$\begin{array}{r} 9 \\ - 6 \\ \hline 3 \end{array}$$

$$\begin{array}{r} 10 \\ - 9 \\ \hline 1 \end{array}$$

$$\begin{array}{r} 10 \\ - 1 \\ \hline 9 \end{array}$$

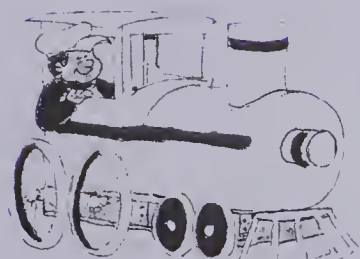
$$\begin{array}{r} 8 \\ - 7 \\ \hline 1 \end{array}$$

$$\begin{array}{r} 9 \\ - 1 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 10 \\ - 0 \\ \hline 10 \end{array}$$

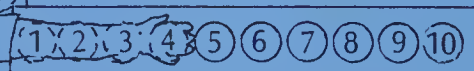
$$\begin{array}{r} 10 \\ - 6 \\ \hline 4 \end{array}$$

$$\begin{array}{r} 5 \\ - 3 \\ \hline 2 \end{array}$$



Reinforcement

1. Make a row of ten objects that are numbered from 1 to 10. Say a subtraction example, such as $10 - 4$. Ask a student to cover the subset of 4 and then count on to 10 to see how many are left. Record the corresponding subtraction sentence.



Five, six, seven, eight, nine, ten.
Six are left.
 $10 - 4 = 6$

2. Provide Name Cards for all subtractions from 10 and interlocking cubes for the students to make trains of ten cubes. The students are to model a Subtraction Name Card by breaking off cubes. They then can record the corresponding subtraction sentence.

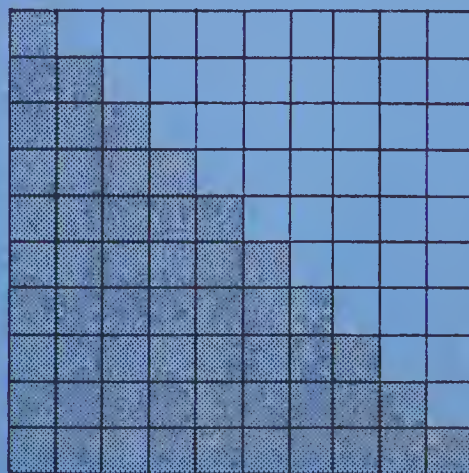
$$10 - 4 \rightarrow \boxed{} \boxed{} \rightarrow 10 - 4 = 6$$

3. Have the students complete the following chalkboard exercise as a review of basic addition and subtraction facts.

- | | |
|----------------------|-----------------------|
| a. $3 + 7 = \square$ | b. $10 - 6 = \square$ |
| c. $2 + 6 = \square$ | d. $10 - 4 = \square$ |
| e. $5 + 5 = \square$ | f. $10 - 2 = \square$ |
| g. $8 + 2 = \square$ | h. $10 - 5 = \square$ |
| i. $4 + 5 = \square$ | j. $10 - 1 = \square$ |
| k. $6 + 4 = \square$ | l. $10 - 3 = \square$ |

Enrichment

Have the students make two-colour trains for addition and/or subtraction names for 10, then order the trains into a pattern (such as stairs, or related addition and subtraction sentences). Ask students to describe their patterns.



Extra Practice

Worksheet A37

Pages 123-124

Subtract. Match names for the same number.

$10 - 3$	$8 - 3$	$10 - 6$	$7 - 5$
$7 - 3$	$10 - 8$	$9 - 2$	$10 - 5$

Objective PS4

Interpret and illustrate simple word/picture problems.

Vocabulary

Number sentence, in all, add, take away, subtract

Materials

Wooden blocks
Large piece of cardboard
T Numeral Cards
Feltboard
Felt cutouts
Newspaper
Crayons

Introducing the Lesson


Play "What did I do?" using blocks and a sheet of cardboard as a shield. Show seven blocks and ask, "How many blocks do you see?" Use cardboard to hide your hand as you add more blocks, then show the new number of blocks. Ask, "What did I do?" You *added two blocks*. "Now how many do you see?" *Nine*. Remove one block and show the remaining blocks. "What did I do?" You *subtracted one block*. "Now how many?" *Eight*.

Flash the T Numeral Cards. Show $\boxed{4}$ as the students take four blocks. Show $\boxed{6}$ and ask, "What should we do to get six?" *Add two more blocks*. Continue as in the previous exercise, but using numeral cards.

Teaching the Lesson


Model addition and subtraction situations using the feltboard and felt cutouts. Ask the students to describe the situations. Record a number sentence for each description.

Draw 8 red apples. 

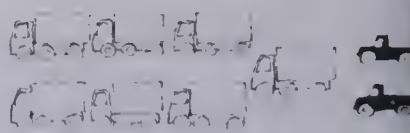
Draw 2 green apples. 

How many apples in all? *Ten*. Write down the number of red apples and the number of green apples. What did we do to 8 and 2 to get 10 in all?


Added. Print a number sentence to show: $8 + 2 = 10$.



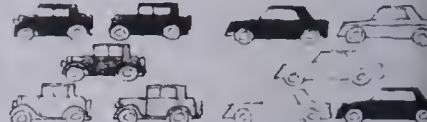
6 red cars
4 blue cars
 $6 + 4 = \boxed{10}$
 $\boxed{10}$ cars in all



7 big trucks
2 little trucks
 $7 + 2 = \boxed{9}$
 $\boxed{9}$ trucks in all




2 yellow balloons
8 green balloons
 $2 + 8 = \boxed{10}$
 $\boxed{10}$ balloons in all




5 old cars
5 new cars
 $5 + 5 = \boxed{10}$
 $\boxed{10}$ cars in all

Draw. Colour.



4 red balloons
4 blue balloons
 $4 + 4 = \boxed{8}$
 $\boxed{8}$ balloons in all



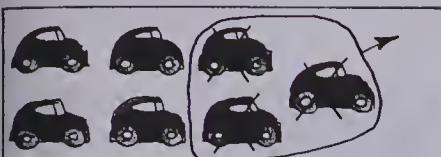
9 yellow balloons
1 green balloon
 $9 + 1 = \boxed{10}$
 $\boxed{10}$ balloons in all

Addition problems

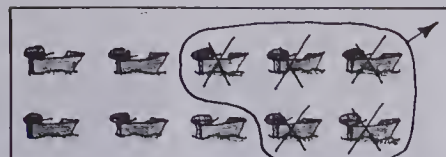
one hundred twenty-five 125

Using the Pages

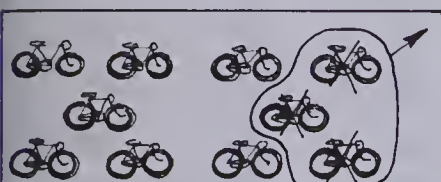
- Page 125 involves interpreting and illustrating addition word/picture problems. If the students have difficulty interpreting the illustrated situations, do the page as a guided lesson.
- Page 126 involves interpreting and illustrating subtraction word/picture problems. Help the students get started by doing an example with them. Check that all words can be read.



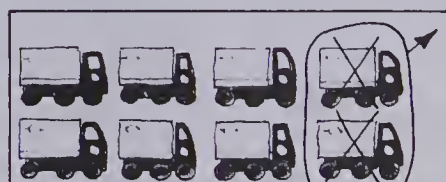
7 cars
3 cars go away.
 $7 - 3 = 4$
4 cars are left.



10 boats
5 boats go away.
 $10 - 5 = 5$
5 boats are left.

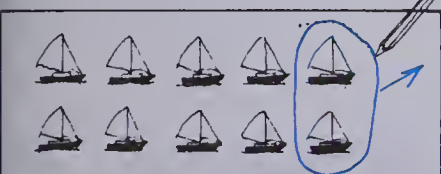


10 bikes
3 bikes go away.
 $10 - 3 = 7$
7 bikes are left.

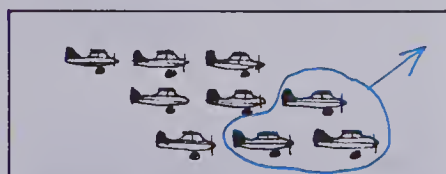


8 trucks
2 trucks drive away.
 $8 - 2 = 6$
6 trucks are left.

Draw.



10 boats
2 boats sail away.
 $10 - 2 = 8$
8 boats are left.



9 planes
3 planes fly away.
 $9 - 3 = 6$
6 planes are left.

126 one hundred twenty-six

Subtraction problems

Reinforcement

1. Make a worksheet of examples using familiar sight vocabulary such as:

Draw 6 yellow fish.

Draw 2 blue fish.

Ask the students to tell you what they have drawn and how many in all. Use subtraction examples as well. (This task is inappropriate for pupils with poor reading skills. Use oral directions for these students.)

2. Using the same worksheet as above, have the students draw the sets then record a number sentence to match.

Draw 6 red apples  $6 + 1 = 7$

Draw 1 green apple  $6 + 1 = 7$

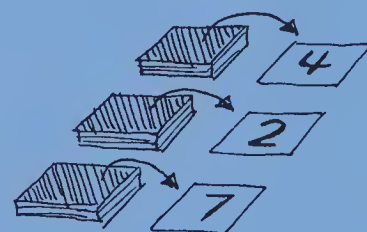
Enrichment

Using the P Numeral Cards, show the students how to pile the cards, turn over one at a time, and record a number sentence to describe the change.

$$3 + 1 = 4$$

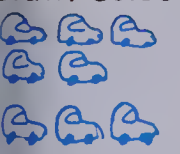
$$4 - 2 = 2$$

$$2 + 5 = 7$$



Extra Practice


Draw. Colour.



5 red cars
3 blue cars
 $5 + 3 = 8$
8 cars in all.

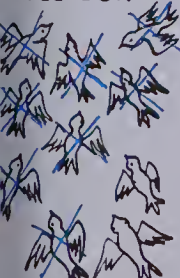
Worksheet PS4

Pages 125-126

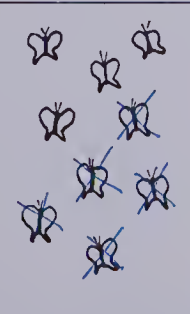


6 yellow balls
4 black balls
 $6 + 4 = 10$
10 balls in all.

Cross out.



10 birds
8 fly away.
 $10 - 8 = 2$
2 birds are left.



9 butterflies
5 fly away.
 $9 - 5 = 4$
4 butterflies left.

Problem Solving Activities

Assign Level 1, Unit 7

Objective N20

Identify a group of ten, and leftovers.

Vocabulary

Tally, sets of ten, tens, leftovers, count by tens, count on from ten

Direction words: Print how many are left over.

Materials

Egg cartons
Wooden blocks
Counters

Introducing the Lesson

Review how to make a tally |||| . Ask the students with sweaters, (running shoes, jeans, T-shirts) to stand. List each article of clothing and tally on the chalkboard how many of each there are. Once the tallies are made, go to each list and count by fives to find how many in all. Next, have the children circle sets of ten tallies $\text{||||} \text{||||}$ and count each set again using *tens* and *leftovers*. Record how many in all, stressing the number of tens and the number left over as the two-digit numerals are recorded.

Teaching the Lesson

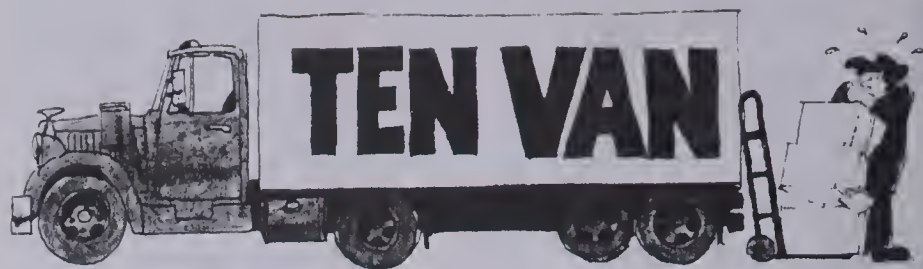
Remove two sections from at least 30 egg cartons. Show the children these egg-carton ten-holders along with approximately 75 wooden blocks. Have each student guess how many blocks there are. Record their guesses on the chalkboard.

Ask if there are at least ten. Have one student fill an egg-carton ten-holder. Repeat the filling of ten-holders until fewer blocks than ten are left. Arrange the trays for *counting by tens* and *counting on the leftovers*.

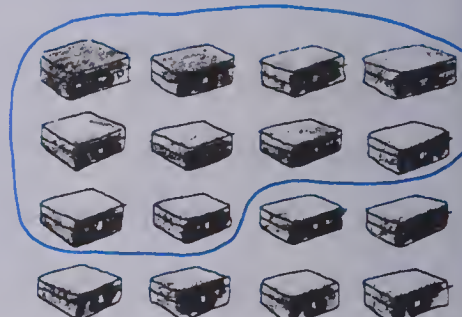
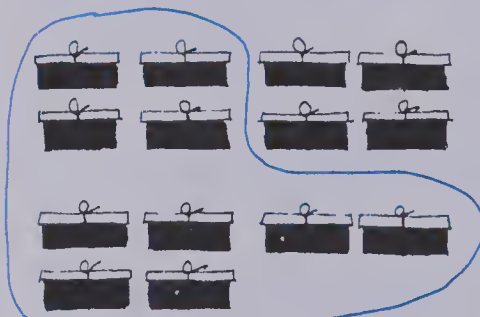
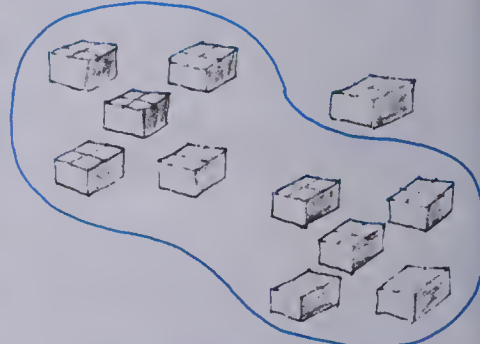
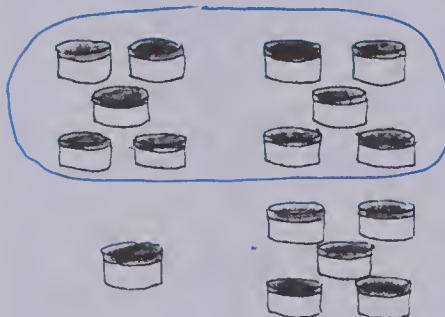
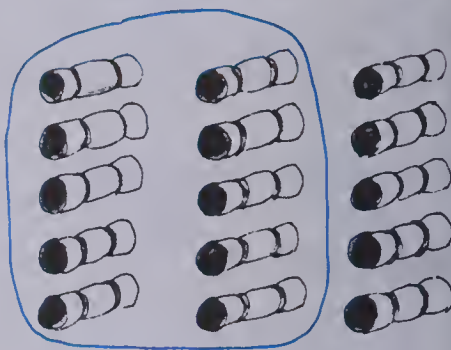
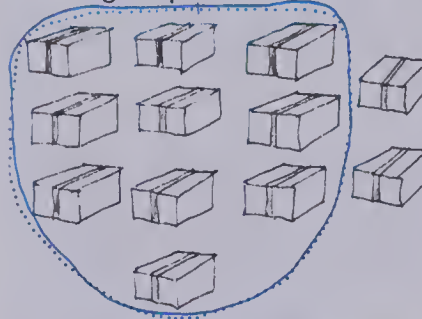
Repeat using other sets of counters (beans, buttons, etc.). If there are more than 100, stack the ten-holders to visually emphasize ten tens or one hundred.



A hundred, ten, twenty, one, two, three.



Circle groups of ten.



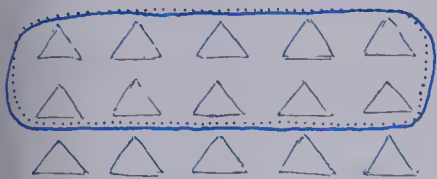
Finding groups of 10

one hundred twenty-seven 127

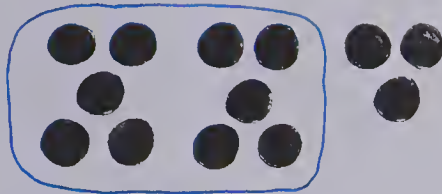
Using the Pages

- On page 127 the students are to find and circle a group of ten. For each set of objects, ask the students how many groups of ten, how many leftovers, and how many there are in all. Emphasize counting on from ten.
- For page 128, use a chalkboard example to show how the students are to record the leftovers. For each ask how many there are in all.

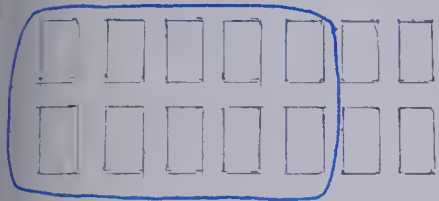
Circle ten. Print how many are left over.



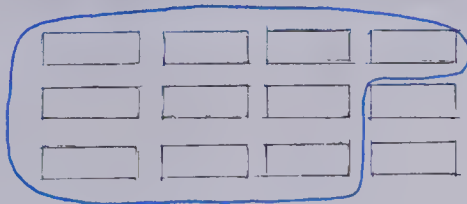
10 and 5



10 and 3



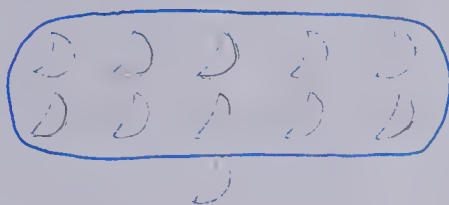
10 and 4



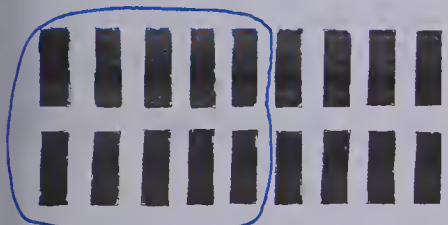
10 and 2



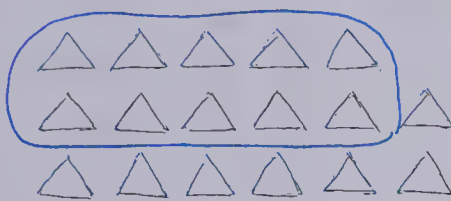
10 and 8



10 and 1



10 and 8



10 and 7

128 one hundred twenty-eight

Finding groups of 10

Reinforcement

1. Provide paper plates with sets of eight to fifteen objects. Give each student an egg-carton ten-holder. Explain how to guess whether there are *more than*, *less than*, or *exactly ten* objects; then use the ten-holder to check.



less than
ten



exactly ten



more than
ten

2. Provide paper and pencils. Count orally to 32 as the students tally the count with tally marks. The students can check their tallies by counting by fives to 30 and then count on 31, 32. Ask the students to find the tens in their tallies and circle them |||| ||||. Next have them count by tens to 30, then count on 31, 32. Repeat by counting orally to 26, 45, and 51.

Enrichment

Introduce oral counting sequences. See if the students can continue the patterns aloud. Repeat the same oral examples and see if the students can record the patterns on the chalkboard as they are said.

1, 2, 3, —, —, —, —
5, 10, 15, —, —, —, —
10, 20, 30, —, —, —, —
2, 4, 6, —, —, —, —
14, 15, 16, —, —, —, —

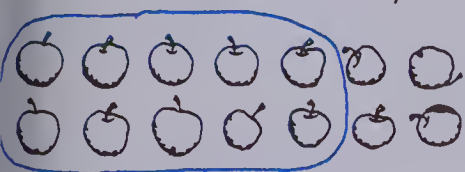
Ensure that a number line is available for the students to copy two-digit numerals and check patterns.

Extra Practice

Worksheet N20

Pages 127-128

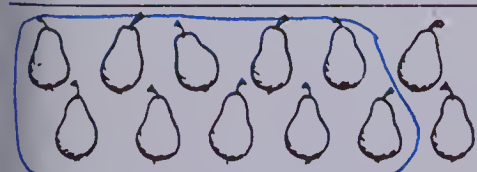
Circle ten. Print how many are left over.



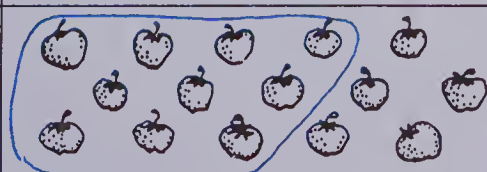
10 and 4



10 and 8



10 and 2



10 and 5

UNIT 7 LESSON 5

Objective N21

Associate two-digit numerals to 19 with a group of ten and leftover ones.

Vocabulary

Ten, leftover ones, count on from ten

Materials

Interlocking cubes
Ten and ones cards

Introducing the Lesson

Ask the students to make a cube train with more than ten but less than twenty interlocking cubes. Ask each student how many cubes were used. Record the amounts on the chalkboard. Ask them to break off a group of ten. Ask what they have now. As each student answers, record the ten and the leftovers on the chalkboard beside the corresponding amounts of cubes.

Ten and four left over. $10 + 4$

Have the ten and the leftovers joined again to show how many cubes there are in all.

Teaching the Lesson

To emphasize the meaning of the digit 1, in the teen numerals, make a habit of saying, for example, "Ten and three, thirteen," or, "One ten and three ones, thirteen in all," as you print 13.

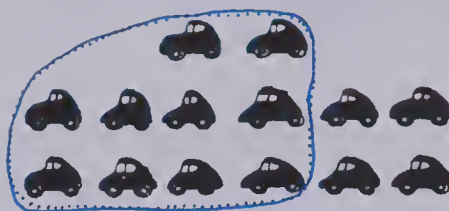
Show a ten and one card, such as $\boxed{10}$ and $\boxed{3}$. (These cards are provided with this *Teacher's Resource Book*.) Have the students make cube trains, break off a ten, and then match the two subsets of cubes to the cards. The cards are then put together to make the numeral we write.



Let each student choose a one card to go with the ten card, then tell the others what number they made. *I have ten and six. That makes sixteen* $\boxed{16}$.

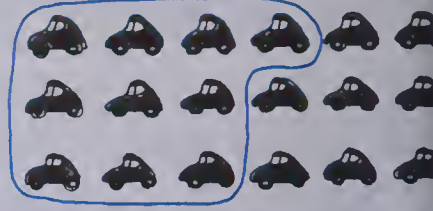
1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20

Circle ten. How many are left over? How many in all?



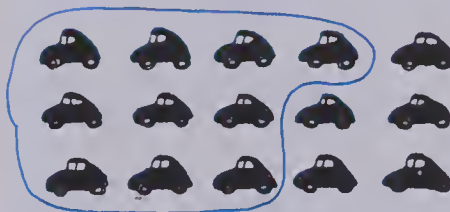
10 and 4

$\boxed{14}$ in all



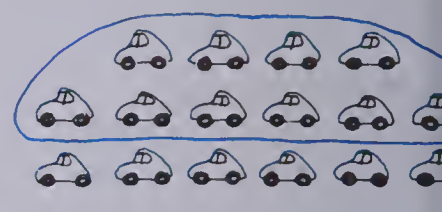
10 and 8

$\boxed{18}$ in all



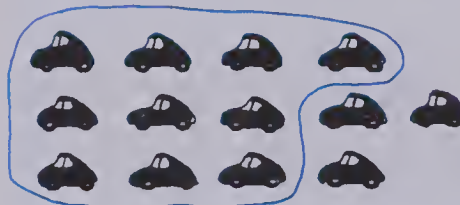
10 and 5

$\boxed{15}$ in all



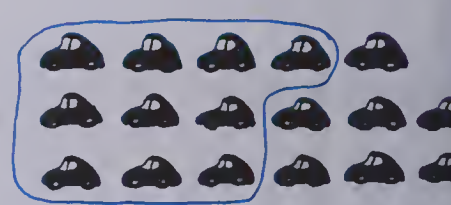
10 and 6

$\boxed{16}$ in all



10 and 3

$\boxed{13}$ in all



10 and 7

$\boxed{17}$ in all

Numerals to 20; sets and numerals to 19

one hundred twenty-nine 129

Using the Pages

- At the top of page 129, have the students as a group trace the numerals to 20. For the two-digit numerals, have them say together the number of tens and ones. Provide several chalkboard examples similar to those on the rest of the page before the students complete the page.
- Page 130 reinforces the concept of place value for numerals to 19. Do a few examples together to help the students get started

	$10 + \underline{\quad 1 \quad}$	11
	$10 + \underline{\quad 2 \quad}$	12
	$10 + \underline{\quad 3 \quad}$	13
	$10 + \underline{\quad 4 \quad}$	14
	$10 + \underline{\quad 5 \quad}$	15
	$10 + \underline{\quad 6 \quad}$	16
	$10 + \underline{\quad 7 \quad}$	17
	$10 + \underline{\quad 8 \quad}$	18
	$10 + \underline{\quad 9 \quad}$	19

130 one hundred thirty

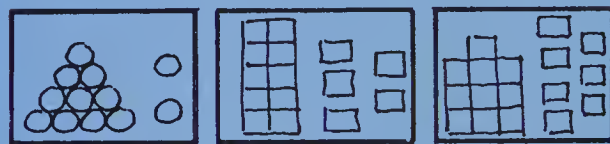
Sets and numerals to 19

Reinforcement

1. Provide a worksheet of two columns, one column of $10 + 3$, $10 + 7$, $10 + 1$, etc, and another column of the numerals from 11 to 19. Have the students match the columns.

$10 + 7$	14
$10 + 3$	17
$10 + 1$	18

2. Provide the students with circle and square stickers and 25 cm by 30 cm cards. Ask them to make sets of ten and leftover ones for the numerals from ten to nineteen. Show them a few ways the set of ten can be arranged. Use the cards for counting practice.



Enrichment

Provide P Numeral Cards for the numbers from 11 to 19. Ask the students to guess how to write them as $10 + \underline{\quad}$. Have them check their guesses by using the ten and ones cards from the lesson.

$$\boxed{17} ? \rightarrow \boxed{10} + \boxed{7} \rightarrow \boxed{17}$$

Extra Practice

Worksheet N21

Pages 129-130

Circle ten. How many left over? How many in all?



10 and 2

12 in all



10 and 9

19 in all



10 and 7

17 in all



10 and 5

15 in all

Objective N22

Identify and compare sets to 13.

Vocabulary

Compare, more, less, equal, count on from ten, count by tens

Direction words: Which is greater?

Materials

Wooden blocks

Ten and ones cards

Cards made in Lesson 5, Reinforcement

Introducing the Lesson

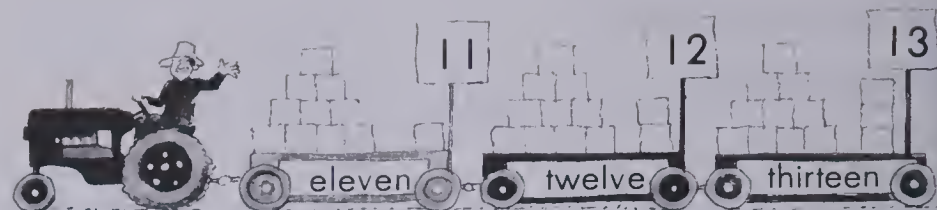
Have the students each take ten wooden blocks and build a shape. Compare the variety of shapes. Ask if any shapes have more blocks or look like they have more. Ask why. Discuss how to check to be sure.

Teaching the Lesson

Have the students take a handful of blocks to add to the ten they already have. Ask them to put all of their blocks into a pile. Choose two of the piles and ask which has more blocks. Ask them how to check. What could we do if we didn't know how to count? We could line the blocks up in one-to-one correspondence. Discuss differences in amounts between pupils. Count to check. Record, for example, Jan—13, Ray—14. Discuss who has more and why. Focus on the fact that while they both have ten, Ray has 10 and 4 while Jan has only 10 and 3. Repeat with other piles of blocks.

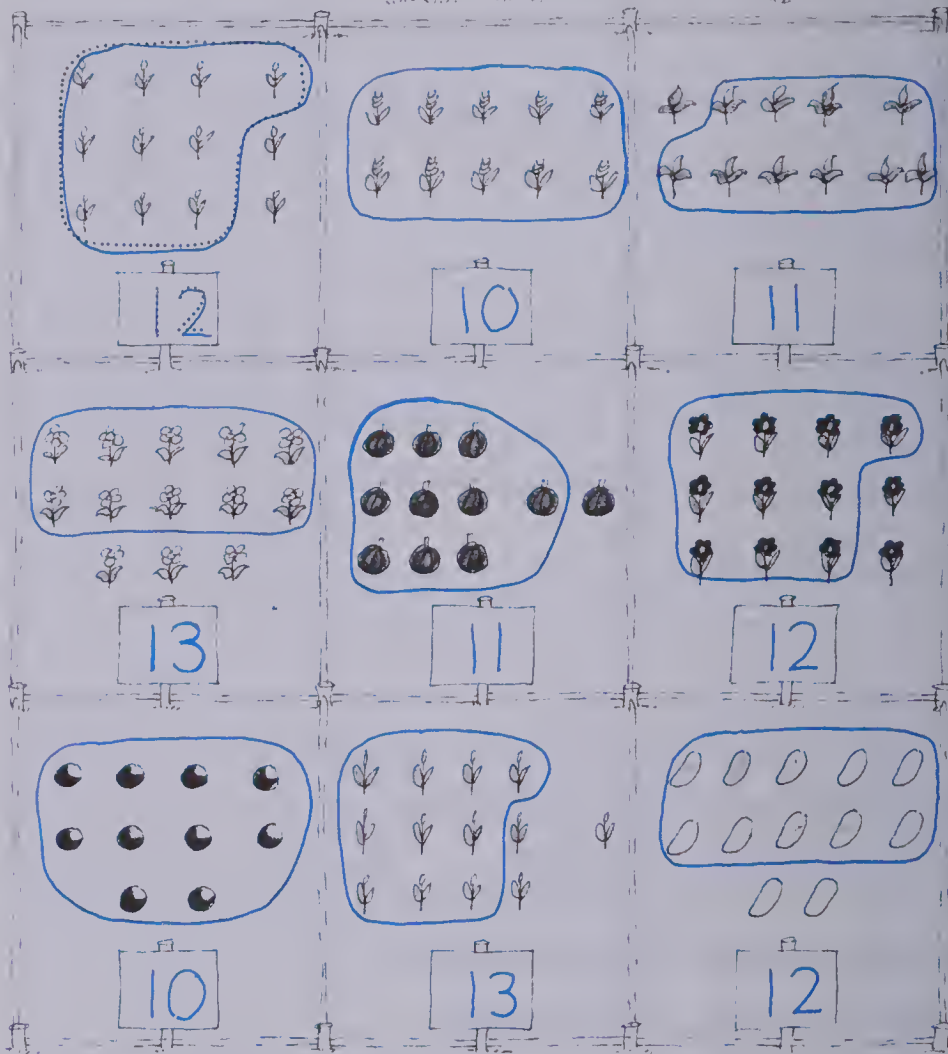
Give out the ten and ones cards (provided in this book). Build a pile of ten and four leftover blocks. Ask how many in each subset as the students show a 10 card and a 4 card. Ask how we write 10 and 4. Have the students place the one card on the ten card to show 14.

Repeat, but use auditory instead of visual clues, such as twelve claps or fourteen snaps. The students can count in their heads and use the ten and ones cards to show how many they have heard.



Circle ten. How many?

10 11 12 or 13

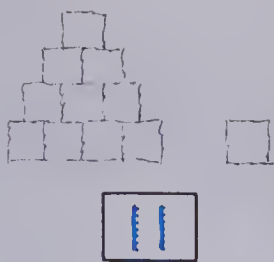
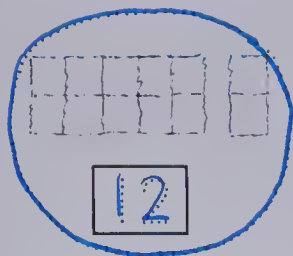


11, 12, and 13

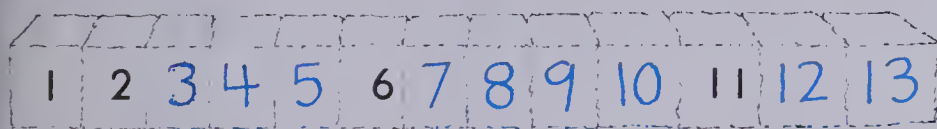
one hundred thirty-one 131

Using the Pages

- Do several examples on page 131 with the students. Encourage them to say to themselves, *ten and two more, twelve in all*, as they print 12.
- On page 132 the students are to count and record how many bales of hay are pictured and then to circle the greater set for each pair of examples.



How many? Which is greater?

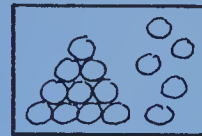


132 one hundred thirty-two

Greater; numerals to 13

Reinforcement

1. Using the cards made in Lesson 5 (Reinforcement), with sticker sets of the numbers from 11 to 19 from Lesson 5, have the students print an addition to show how many in each pile and how many in all.



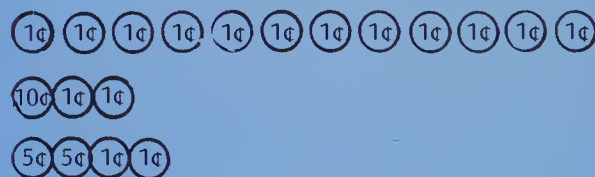
10 + 5
15 in all

2. Give the students pencils and paper. Call out two numbers between 0 and 13 for the students to record. Then ask them to circle the greater number.

4	11
2	8
12	9
10	13

Enrichment

Use dimes, pennies, and nickels to play a trading game. Ask the students to show the ways to make an amount of money, such as 12¢. Show them how to draw their amounts of money using 10¢ for dimes, 1¢ for pennies, and 5¢ for nickels.



Ask them to draw ways to have 10¢, 18¢, 14¢, 16¢, 22¢, 26¢, etc.

Extra Practice

Worksheet N22

Pages 131-132

How many? Which is greater?

UNIT 7 LESSON 7

Objective N23

Identify and compare sets to 19.

Vocabulary

Tens, ones, count by tens, count on from ten

Materials

Egg-carton ten-holders
Bingo chips
Dimes and pennies
Ten and ones cards

Introducing the Lesson

Using a large pile of bingo chips and egg-carton ten-holders, see how many groups of ten can be made and how many ones or leftovers there will be. Have the students count the tens. *Ten, twenty, thirty, ...* If there are more than 10 tens, stack the holders to show a group of 100. Ask for a name for ten tens. *A hundred.* Continue until all bingo chips are accounted for. Recount them by hundreds, tens, and ones.

Teaching the Lesson

Have each student take a group of bingo chips and find how many tens and leftover ones there are. As each student finds out how many, record the numeral on the chalkboard in the following ways:

17	24
seventeen	twenty-four
$10 + 7$	$20 + 4$
ten and seven	two tens and four

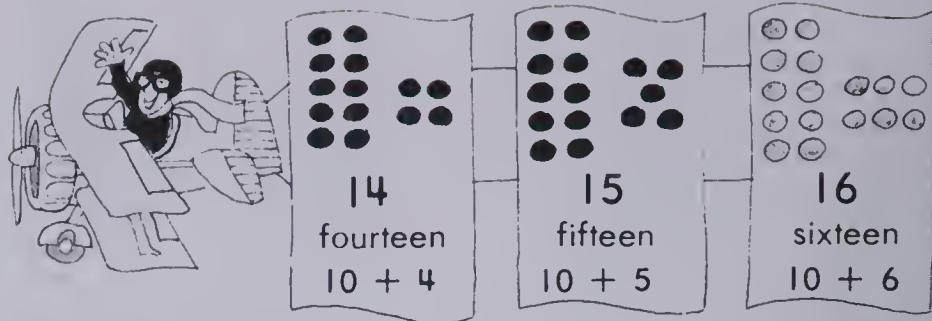
Practise counting on from ten using dimes and pennies.

10¢ 1¢ 1¢ 1¢ 1¢

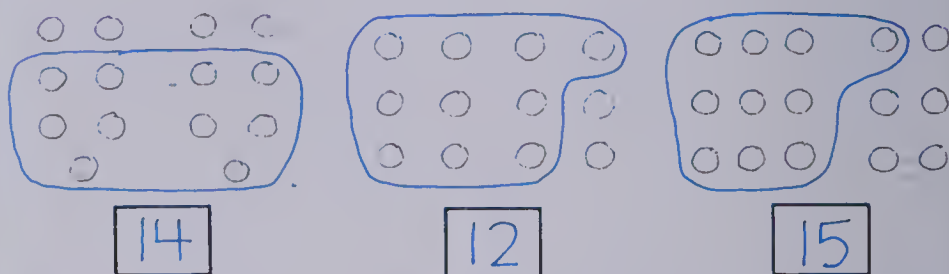
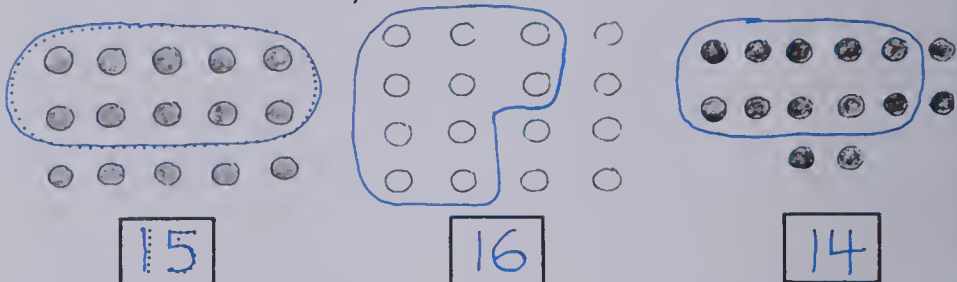
Ten, eleven, twelve, thirteen, fourteen, fourteen in all.

Hand a student a dime and some pennies. Ask how much in all. Repeat. Have the student show two ways to make a given amount in the teens.

10¢ 1¢ 1¢ or
1¢ 1¢ 1¢ 1¢ 1¢ 1¢ 1¢ 1¢ 1¢ 1¢ 1¢



Circle ten. How many in all?



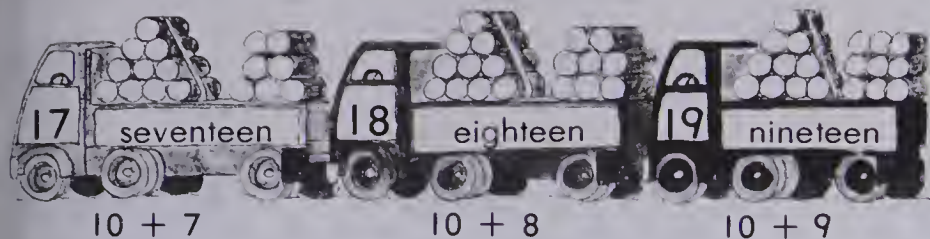
14, 15, and 16

one hundred thirty-three 133

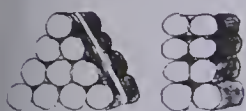
Using the Pages

- Page 133 requires finding a group of ten, circling it, and recording the appropriate numeral.
- Page 134 shows a group of ten logs with leftovers and encourages counting on to determine how many logs there are in all.





How many?



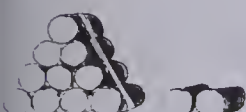
18



17



14



12



19



18



15



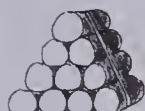
17



19



16



10



17

134 one hundred thirty-four

17, 18, and 19

Reinforcement

1. Provide a worksheet of illustrated sets of from 11 to 19 objects for the students to find a group of ten and then record how many in all.



2. Call out numbers from 11 to 19 individually and in mixed order for the students to record. Then ask them to write another name for the numbers called.

$$18 = 10 + 8$$

$$14 = 10 + 4$$

$$12 = 10 + 2$$

Enrichment

Show three numbers, two of which add to 10. Ask the students to add all three numbers, but to try to find a ten first. At first, work with blocks and without paper and pencil, then work with just the numbers.

"How many blocks?" ten and five

Fifteen in all. 

How many in all? $\overset{10}{(3+7)} + 5, 10 + 5, 15$ in all.

Extra Practice

Worksheet N23

Pages 133-134

Circle ten. How much in all?



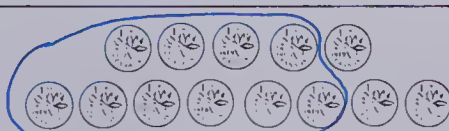
14 ¢



11 ¢



17 ¢



13 ¢

Objective N24

Compare numbers to 19; review addition and subtraction facts to 10.

Vocabulary

More, less, equal, compare, greater, lesser

Materials

Large sheet of graph paper

Blank cards

P Numeral Cards

Hidden addend cards

Introducing the Lesson

Ahead of time, have the students colour in a square for each letter in their first and last names on a large sheet of graph paper. Use these totals for the basis of comparison questions. Begin by comparing the coloured squares, then compare the numbers recorded for the number of letters in each student's name.

Teaching the Lesson

Play a memory game using a deck of cards numbered from 1 to 20. Turn the cards face down in a 4 by 5 array. One student turns a card while a second student tries to turn over a card with a higher or greater number. If it is greater, the second student takes both cards and turns over another one for the first student to try to beat. If the second card is less, both cards are turned over and two new students take a turn.

Review addition names for ten using the P Numeral Cards. Ask the students to place together pairs of cards that make sums of ten.

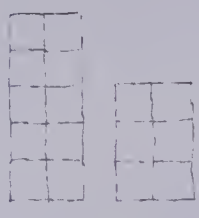

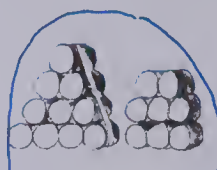

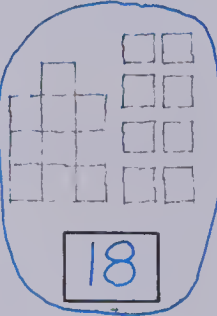
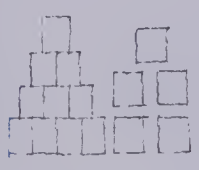
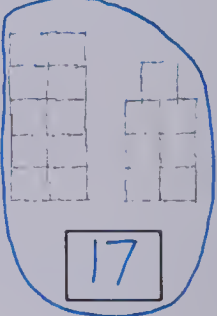
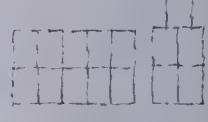
2 8

7 3

Review the subtraction facts from 10 by saying a fact and having the students hold up a numeral card to show the answer. Provide counters, if necessary.

Review addition facts to 10 with the cards (made in earlier lessons) having one addend on one side and another addend on the back.

How many? Which set is greater?

 16	 19	 18	 17
 18	 15	 17	 15

Which is greater?

12 15

14 11

7 13

15 19

16 12

11 9

10 15

11 18

17 14

13 19

6 15

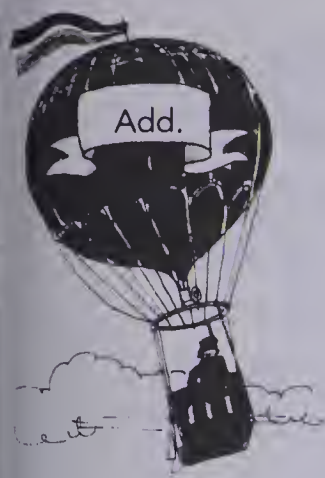
18 15

Greater

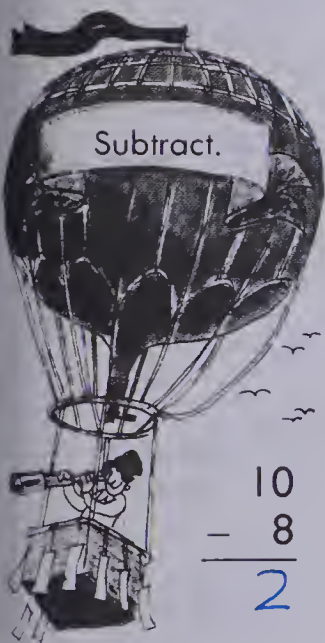
one hundred thirty-five 135

Using the Pages

- On page 135, draw an illustration for each comparison exercise.
- On page 136, see that the students realize that the top examples are addition while the bottom are subtraction.



$\begin{array}{r} 5 \\ + 5 \\ \hline 10 \end{array}$	$\begin{array}{r} 2 \\ + 6 \\ \hline 8 \end{array}$	$\begin{array}{r} 8 \\ + 2 \\ \hline 10 \end{array}$	$\begin{array}{r} 9 \\ + 1 \\ \hline 10 \end{array}$
$\begin{array}{r} 4 \\ + 5 \\ \hline 9 \end{array}$	$\begin{array}{r} 7 \\ + 3 \\ \hline 10 \end{array}$	$\begin{array}{r} 4 \\ + 4 \\ \hline 8 \end{array}$	$\begin{array}{r} 6 \\ + 4 \\ \hline 10 \end{array}$
$\begin{array}{r} 5 \\ + 3 \\ \hline 8 \end{array}$	$\begin{array}{r} 2 \\ + 7 \\ \hline 9 \end{array}$	$\begin{array}{r} 1 \\ + 9 \\ \hline 10 \end{array}$	$\begin{array}{r} 3 \\ + 6 \\ \hline 9 \end{array}$
$\begin{array}{r} 2 \\ + 8 \\ \hline 10 \end{array}$	$\begin{array}{r} 8 \\ + 1 \\ \hline 9 \end{array}$	$\begin{array}{r} 4 \\ + 6 \\ \hline 10 \end{array}$	$\begin{array}{r} 5 \\ + 4 \\ \hline 9 \end{array}$
			$\begin{array}{r} 3 \\ + 7 \\ \hline 10 \end{array}$



$\begin{array}{r} 10 \\ - 4 \\ \hline 6 \end{array}$	$\begin{array}{r} 9 \\ - 6 \\ \hline 3 \end{array}$	$\begin{array}{r} 8 \\ - 8 \\ \hline 0 \end{array}$	$\begin{array}{r} 10 \\ - 7 \\ \hline 3 \end{array}$
$\begin{array}{r} 9 \\ - 4 \\ \hline 5 \end{array}$	$\begin{array}{r} 10 \\ - 5 \\ \hline 5 \end{array}$	$\begin{array}{r} 10 \\ - 2 \\ \hline 8 \end{array}$	$\begin{array}{r} 8 \\ - 7 \\ \hline 1 \end{array}$
$\begin{array}{r} 10 \\ - 8 \\ \hline 2 \end{array}$	$\begin{array}{r} 10 \\ - 6 \\ \hline 4 \end{array}$	$\begin{array}{r} 8 \\ - 5 \\ \hline 3 \end{array}$	$\begin{array}{r} 10 \\ - 3 \\ \hline 7 \end{array}$
			$\begin{array}{r} 9 \\ - 3 \\ \hline 6 \end{array}$

Reinforcement

1. Display a deck of cards numbered from 1 to 20. Have the students make two piles, face down. One student turns over the top card in each pile and calls out the two numbers. Individual students from the rest of the class must identify the greater or lesser number.

2. Provide a chalkboard exercise of addition and subtraction examples.

- | | |
|--------------|---------------|
| a. $3 + 7 =$ | b. $10 - 6 =$ |
| c. $2 + 6 =$ | d. $9 - 3 =$ |
| e. $9 + 1 =$ | f. $8 - 4 =$ |
| g. $5 + 5 =$ | h. $10 - 8 =$ |
| i. $4 + 5 =$ | j. $9 - 7 =$ |

Enrichment

Provide a worksheet of **before** and **after** counting questions using the numbers to 50. A number line should be available for checking or finding answers.

- | | |
|---|---|
| a. $\underline{15} \quad \underline{16} \quad \underline{17}$ | b. $\underline{\quad} \quad 28 \quad \underline{\quad}$ |
| c. $\underline{\quad} \quad 31 \quad \underline{\quad}$ | d. $\underline{\quad} \quad 45 \quad \underline{\quad}$ |
| e. $\underline{\quad} \quad 19 \quad \underline{\quad}$ | f. $\underline{\quad} \quad 24 \quad \underline{\quad}$ |
| g. $\underline{\quad} \quad 10 \quad \underline{\quad}$ | h. $\underline{\quad} \quad 38 \quad \underline{\quad}$ |

Extra Practice

Add.

$7 + 3 = \boxed{10}$	$4 + 5 = \boxed{9}$	$2 + 8 = \boxed{10}$
$3 + 4 = \boxed{7}$	$9 + 1 = \boxed{10}$	$3 + 6 = \boxed{9}$
$5 + 5 = \boxed{10}$	$4 + 4 = \boxed{8}$	$4 + 6 = \boxed{10}$

Subtract.

$10 - 5 = \boxed{5}$	$8 - 4 = \boxed{4}$	$10 - 1 = \boxed{9}$
$9 - 3 = \boxed{6}$	$10 - 6 = \boxed{4}$	$7 - 5 = \boxed{2}$
$10 - 7 = \boxed{3}$	$9 - 0 = \boxed{9}$	$10 - 2 = \boxed{8}$

Worksheet N24

Pages 135-136

Objective N25

Identify and order numbers to 20.

Vocabulary

More, less, equals, count by tens, groups of ten, twenty, in order

Direction words: Fill in the missing numerals.

Materials

Number line to 100

Beans

Egg-carton ten-holders

Wooden blocks

Multiples of 10 cards

P Numeral Cards

Introducing the Lesson

Have a circle of students hold their hands out for counting. Ask a student to group all these fingers into tens. The class starts by counting the fingers aloud by ones. As they finish counting each group of ten fingers, the student selected earlier folds the two hands. When all the fingers have been counted by ones and all the hands are folded in sets of ten, recount the fingers by tens. Compare the totals.

Show the multiples of ten pattern on the number line. Use a soft-loud counting pattern to read the numbers, emphasizing the multiples of ten with a loud voice. *One, two, three, four, five, six, seven, eight, nine, TEN, eleven, ...*

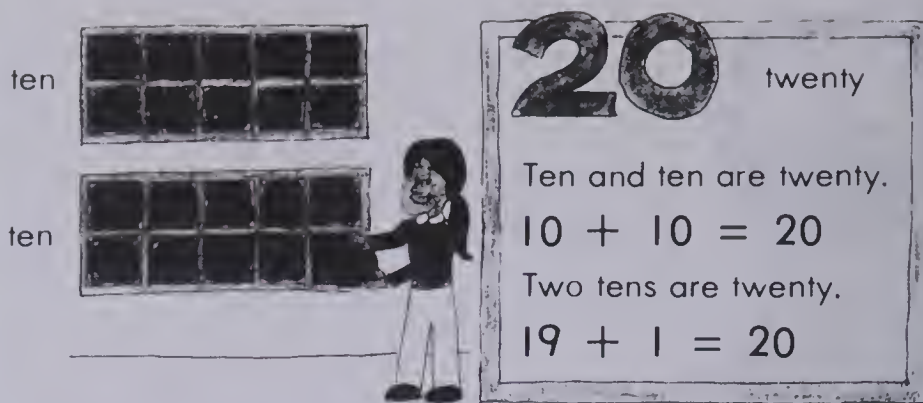
Teaching the Lesson

Show various sets of beans and ask the students whether they think there are more or less than 20 beans, or exactly 20. Make a tally of their guesses on the chalkboard. Count to check their guesses by filling the egg-carton ten-holders with the beans. Identify how many in all, emphasizing two tens as twenty.

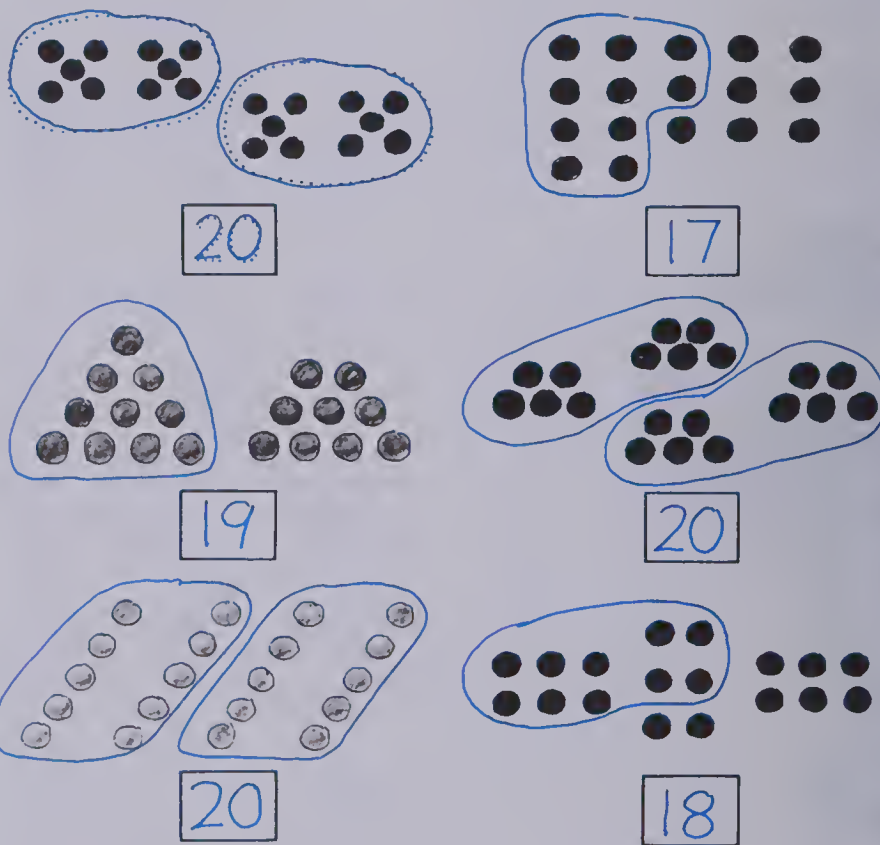


Twenty beans in all
Two tens.

Repeat with a different set of objects.



Circle groups of ten. How many in all?



Twenty

one hundred thirty-seven 137

Using the Pages

- Read the names for 20 at the top of page 137. Point out other names for 20 (see Reinforcement 2) and record them on the chalkboard. Direct the students to circle groups of ten as they count each set and record how many in all.
- Page 138 provides practice with printing numerals to 20 and ordering by ones.

Count.

1 2 3 4 5 6 7 8 9 10

11 12 13 14 15 16 17 18 19 20

Fill in the missing numerals.

138 one hundred thirty-eight

Ordering numbers to 20

Extra Practice

Circle groups of ten. How many in all?

Worksheet N25

Pages 137-138

Reinforcement

1. Use tallies to record how many students and how many chairs are in the room. Look for groups of ten. Ask which sets of tally marks have twenty (or two tens), more than twenty, or less than twenty.

Chairs

Students

twenty or two tens

ten

2. Show 20 wooden blocks. Record names for 20 by separating the blocks into subsets and reading and recording the arrangements.

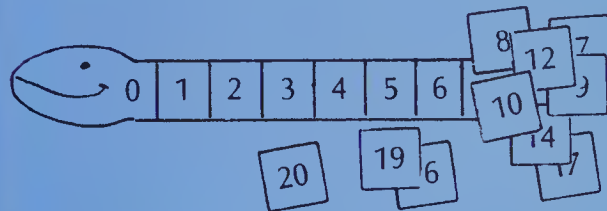
$10 + 10$ $19 + 1$



5 + 5 + 5 + 5

3. Provide a worksheet of the numerals from 1 to 20 in dotted form for extra printing practice. Check numeral formation and the left-to-right order of the two digits in the numbers from 10 to 20. Emphasize place value with verbal cues. As the students print one and then six or sixteen, have them say, *ten and six*.

4. Have the students make construction paper number-snakes using the numbers from 0 to 20. After the snakes are made, they can be cut apart to make an ordering game.



Enrichment

Have the students work in pairs. One student prints a sequence of three numbers. The other tries to identify and extend the pattern by three more numbers. The students then discuss the pattern of the sequence and repeat the procedure with the partner.

20, 30, 40, , ,

99 98 97

11, 12, 13, _____, _____, _____

Objective N26

Order numbers to 20.

Vocabulary

Count on, ten and ones, in order, greater

Materials

T Numeral Cards
Addition Name Cards
Subtraction Name Cards

Introducing the Lesson

Review counting on, saying, "Start at 12 and count on." *Thirteen, fourteen, fifteen.* Repeat from other numbers.

Teaching the Lesson

Distribute the T Numeral Cards from 1 to 20 in mixed order. Use a clock to time how long it takes for all 20 numbers to be called out in order by the students holding the cards. Have each student stand, show his or her card, and call the number at the appropriate time. Record the time it takes. Change cards. Repeat. Compare the times after several tries. Are the times getting faster?

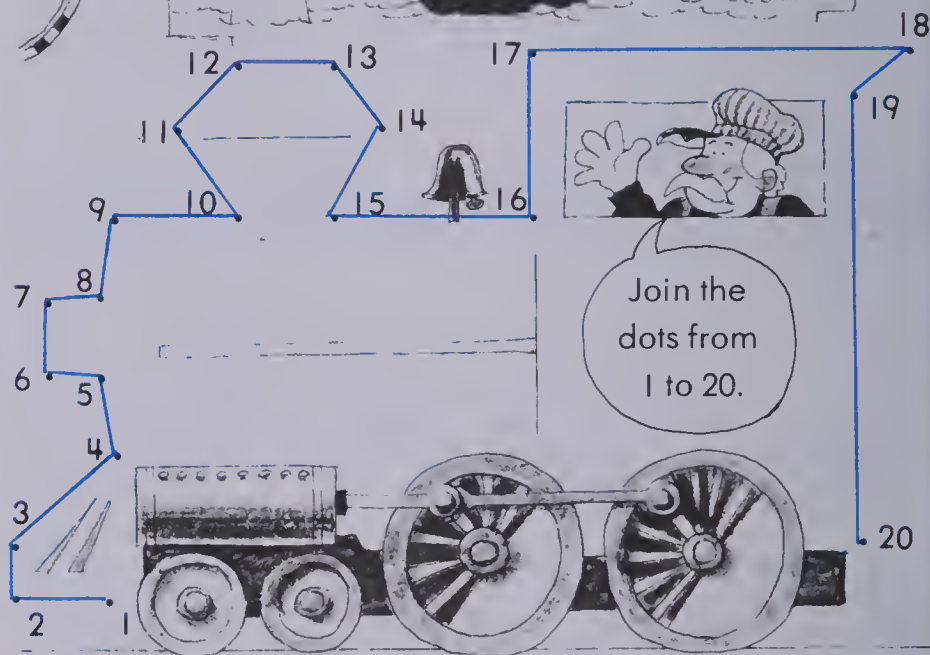
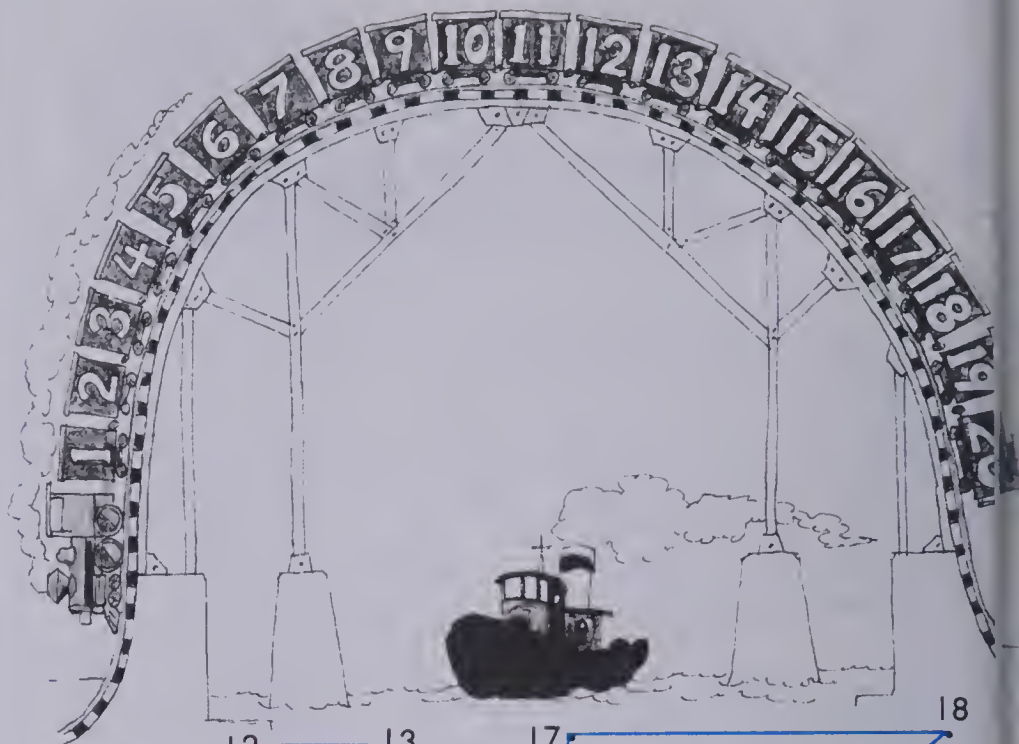
Divide the class into two teams and have ready two piles of Numeral Cards to 20 in mixed order. Have one member from each team turn over a card and say the number. The greater number gets a point for that team. Tally the points on the chalkboard. Compare the results.

Reinforcement

1. Give the students piles of P Numeral Cards to order.
2. Provide materials for the students to practise printing two-digit numerals at the Numeral Printing Centre, as suggested in the introduction to Unit 4.

Enrichment

Show the students how to create their own dot-to-dot puzzle by drawing a simple picture, finding a long connecting line, and naming points along that line.



Counting to 20

one hundred thirty-nine 139

Using the Page

- The dot-to-dot exercise on page 139 provides practice in ordering numbers to 20. Review the directions carefully with the students before they begin.

Add.

$$\begin{array}{r} 3 \\ + 7 \\ \hline 10 \end{array} \quad \begin{array}{r} 4 \\ + 4 \\ \hline 8 \end{array} \quad \begin{array}{r} 2 \\ + 8 \\ \hline 10 \end{array} \quad \begin{array}{r} 5 \\ + 5 \\ \hline 10 \end{array} \quad \begin{array}{r} 9 \\ + 1 \\ \hline 10 \end{array} \quad \begin{array}{r} 6 \\ + 4 \\ \hline 10 \end{array}$$

Subtract.

$$\begin{array}{r} 10 \\ - 5 \\ \hline 5 \end{array} \quad \begin{array}{r} 10 \\ - 3 \\ \hline 7 \end{array} \quad \begin{array}{r} 10 \\ - 8 \\ \hline 2 \end{array} \quad \begin{array}{r} 10 \\ - 5 \\ \hline 5 \end{array} \quad \begin{array}{r} 10 \\ - 1 \\ \hline 9 \end{array} \quad \begin{array}{r} 10 \\ - 6 \\ \hline 4 \end{array}$$

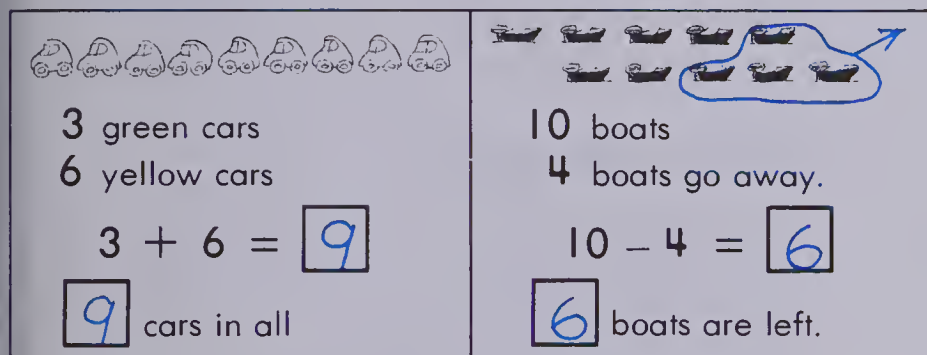
How many in all?



Count.

8	9	10	11	12	13	14	15	16	17	18	19	20
---	---	----	----	----	----	----	----	----	----	----	----	----

Which is greater?



140 one hundred forty

Unit 7 Test

Informal Assessment

1. Counting Skills

- How far can the student rote count?
- Can the student accurately count sets to 20?
- When the student counts on from a grouped ten
 - does he or she immediately say, *Ten, eleven, twelve, thirteen*, for

--	--	--	--

--	--

 ?
 - does he or she insist on counting from one despite groupings?

Students who continue to count from one and who do not utilize groupings at all will need considerably more experience with counting and grouping materials before place value is introduced in Unit 9.

- Can the student count in multiple patterns (an enrichment objective at this point)—twos, fives, tens?

2. Numeral Printing Skills

- Are digits correctly formed with no reversals?
- Are the tens and ones in the correct order for the numerals from 10 to 20?

3. Addition Skills

- Can the student readily identify names for ten, given several Addition or Subtraction Name Cards?
- At what level is the student responding to sums to ten? — recall? — mental reasoning? — counting using objects?

4. Subtraction Skills

Given an example such as $10 - 6 = \square$ does the student:

- immediately respond correctly?
- relate $6 + 4 = 10$ to $10 - 6 = 4$?
- count back 6, or to 6, starting at 10?
- use counters or fingers to show 10, then remove six?

5. Interpreting Picture and Word Problems

- Can the student translate a pictured addition situation to a number sentence?

$$\begin{array}{|c|c|c|c|} \hline & & & \\ \hline \end{array} \begin{array}{|c|c|c|c|} \hline & & & \\ \hline \end{array} \quad 5 + 5 = 10$$

- Can the student translate a pictured subtraction situation to a number sentence?

$$\begin{array}{|c|c|c|c|c|c|c|} \hline & & & & & & \\ \hline \end{array} - \begin{array}{|c|c|c|} \hline & & \\ \hline \end{array} \quad 10 - 5 = 5$$

- Can the student interpret a simple word problem, using familiar vocabulary and/or pictures?

UNIT 7

TEST

- Part 1: Add to sums of 10.
- Part 2: Subtract from numbers to 10.
- Part 3: Count and print numerals to 20.
- Part 4: Order numerals to 20.
- Part 5: Compare numerals to 20.
- Part 6: Interpret picture/word problems.

UNIT 8

Geometry and Measurement

Theme: Shapes, Lengths, and Time

Lesson		Objective	Pages
1	G1	Recognize boxes, cans, balls, and cones.	141-142
2	G2	Recognize circles and triangles.	143-144
3	G3	Recognize squares and rectangles.	145-146
4	G4	Recognize faces, edges, and corners.	147-148
5	M3	Compare lengths: shorter, longer, or the same.	149-150
6	M4	Measure length using nonstandard units.	151-152
7	M5	Measure length using centimetre units.	153-154
8	M6	Tell time to the hour.	155-156
9	M7	Tell time to the hour.	157-158
10	M8	Name the days of the week; fill out dates on a calendar.	159
Test		Geometry and measurement	160

Vocabulary

shapes	box
can	ball
cone	roll
circle	triangle
inside	outside
corners	sides
curved	straight
square	rectangle
face	edge
shorter	longer
same	length
long	centimetre
cm	ruler
hour	minute
o'clock	time
clock	hour hand
minute hand	calendar

Sunday, Monday, Tuesday, Wednesday,
Thursday, Friday, Saturday

Printed Directions:

Trace around.
Write **T** in triangles.
Write **C** in circles.
Colour all the squares green.
Then colour the other rectangles blue.
Colour the white faces.
Put **C** on the corners of the yellow faces.
Put **E** on the edges of the yellow faces.
Which is **longer**?
Which is **shorter**?
About how long is each ribbon?
Use your centimetre ruler to measure each straw.
What time is it?
Make a calendar.

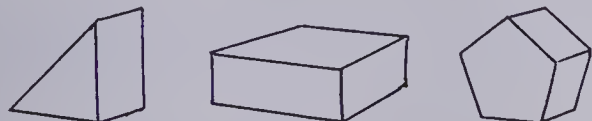
Materials

Placemats for sorting shapes

Cardboard triangles, circles, squares, and rectangles of various sizes

Boxes, cans, balls, and cones of various sizes

Prisms of various kinds (especially triangular and rectangular)



Centimetre paper strips



Centimetre rulers

Large cardboard clock

Blank clocks worksheet (provided in this *Teacher's Resource Book*)

Time flash cards

1 o'clock to 12 o'clock

1:00 to 12:00

Large, blank calendar

wooden board

Plasticene

pipe cleaners

geoboards

string

paper clips

pennies*

spoons

alarm clock

scissors

rope

straws

rubber bands

glue

centimetre cubes

clothes pins

stop watch

digital clock

*Available in Houghton Mifflin K-2 Activity Kit.

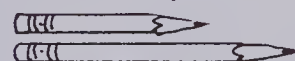
approach should be one of guided discovery, encouraging students in activities such as feeling, sorting, drawing, cutting, folding, and comparing with frequent opportunities to discuss and share their ideas.

Unit 8 deals with the topics of geometry and measurement. It is designed to give students an intuitive and informal introduction to the world of geometry. To begin, activities are provided that involve the identification of shapes such as boxes, cans, balls, and cones. Then, students colour and identify circles, triangles, squares, and rectangles. The amount of meaningful geometry work that can be provided on a two-dimensional page is limited at this level. The emphasis should be on activities with physical objects, as outlined in the Activity Centre and Ideas sections of this unit introduction. Pupil pages are meant to follow and supplement such activities.

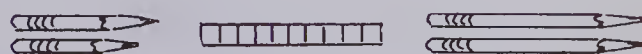
Lessons 5, 6, and 7 of this unit involve the measurement of length. These three lessons provide experience with several types of measurement activities. They reflect the following sequences of development of measurement concepts:

A. Comparing lengths

1. comparing of two objects (Which is shorter? longer? Are they the same length?)



2. comparing of an object to a standard length (Which pencils are longer, and which are shorter than this strip? Are any the same length?)

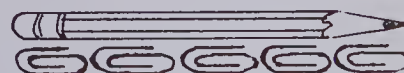


Shorter

Longer

B. Measuring length with arbitrary units

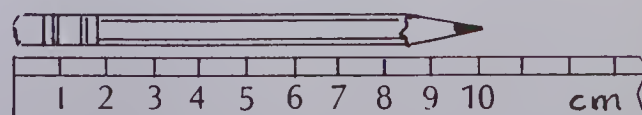
1. using paper clips to match the length of a pencil.



2. using one unit repeatedly to measure length.



C. Measuring length in standard units using a standard centimetre ruler.



About This Unit

Geometry is a relatively new topic in the elementary mathematics curriculum. It is important for teachers to understand that the purpose of introducing geometry into the elementary school is *not* to have students learn a formal structure of facts, but to aid students in developing an *intuitive* grasp of geometrical concepts. This is achieved by encouraging students to observe shapes in the world about them and to help them organize their observations according to various attributes. The basic

Depending on the ability of the students in your class and the experience they have had with measurement, you may need to provide more activity at any of the stages mentioned. See the Ideas section on measurement for suggestions.

The last three lessons in Unit 8 deal with telling time by reading a clock on the hour and with using a calendar. The introduction of Unit 7 provided informal ideas for developing the concepts of time and sequence. Your students' ability with those tasks should provide some indication of readiness to read a clock and calendar. Some students may already wear watches and tell time. (If they have digital watches, reading a clock face may still be a very new idea.) Since the pupil pages deal only with telling time on the hour, you may need to provide activities with the half-hour or minute for more able students. This *Teacher's Resource Book* provides a worksheet of blank clock faces for such activities.

The major emphasis in Unit 8 is on having students develop the concepts of geometry and measurement through active manipulation of physical objects. Pupil page activities alone cannot provide such activity. Daily lessons and the following ideas are meant to provide opportunities for comparing, sorting, tracing, measuring, constructing, and manipulating three-dimensional objects as prerequisite activities to the two-dimensional work on pupil pages.

Activity Centre

The following are various activities for a Geometry Centre in your classroom.

1. *Sorting Box and Can Shapes*

Materials: Two cardboard boxes. Paste a picture of a can on one box and the picture of a box on the other. Collect a variety of can and box shapes.

Task: Sort the objects and place them in the correct box.

Comments: "Why did you put this object in this box? What does a box look like? What does a can look like?"

Variation: Include objects like spools, thimbles, buttons, chalk brush, straw, etc., that are not so obvious as box or can shapes.

Generate discussions about the sorting of

these shapes.

2. *Rollers—Not Rollers*

Materials: Variety of cans, boxes, balls, and cone-shaped items. Label a sorting box "Rollers" and another box "Not Rollers".

Prop one end of a board up on four books (about 15 cm in height) as a testing device.

Task: Test and sort the objects that roll or do not roll into the boxes.

Comments: "Do cans always roll? What object always rolls? What object rolls oddly? What object never rolls?"

3. *Families of Shapes*

Materials: A large variety of circles, triangles, squares, and rectangles. Loops of string.

Task: Sort the shapes into families.

Variations: Sort shapes into two groups—shapes with corners, shapes without corners.

Sort shapes into two groups—shapes with four sides, shapes not with four sides.

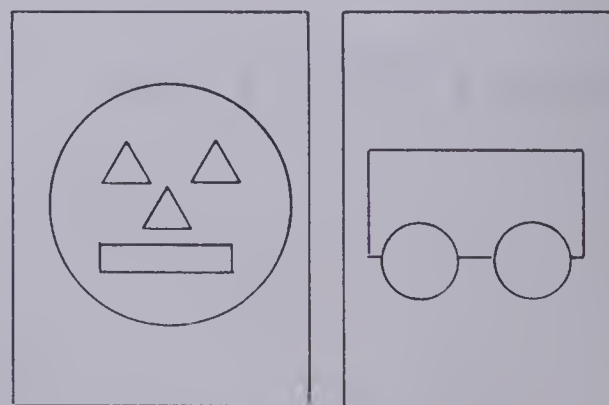
Comments: "How are squares and triangles the same? How are squares and triangles not the same? How are squares and rectangles the same? How many sides do triangles have? How many corners do triangles have? How many corners do squares have? How many sides do squares have? How many sides do rectangles have? How many corners do rectangles have?"

4. *Tracing Shapes*

Materials: A variety of cardboard circles, squares, triangles, rectangles, blank paper, and pencils.

Task: a. Trace around these shapes.

b. Trace around some shapes to make a picture.

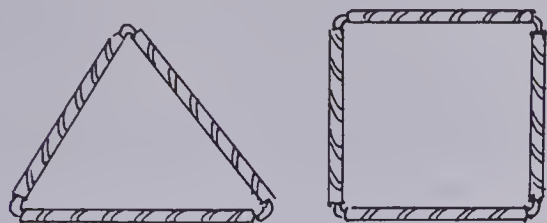


5. *Polygons and Straws*

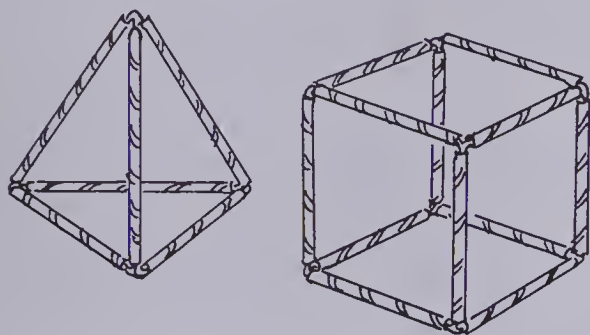
Materials: Soda straws, soda straws cut in half, pipe cleaners cut in 4 cm lengths.

Task: Use straws and pipe cleaners to make

shapes that look like triangles and squares drawn on paper.



Variation: Make three-dimensional shapes.



6. Faces of Shapes

Materials: A variety of geometric solids and blank paper.

Task: Place a shape on the paper and trace around the faces of the shape. Colour the picture you make.

7. Faces of Polyhedrons

Materials: A variety of geometric solids (cones, cylinders, cubes, boxes, triangular prisms, etc.).

Task: Sort the shapes that have faces that look like a triangle, circle, square, or rectangle.

8. Geoboards

Materials: Geoboards, elastics.

Task:

- Draw various triangles, squares, and rectangles on the chalkboard or on cards. Have the students make these shapes on their geoboards.
- Make shapes with 3 sides.
- Make shapes with 4 sides.
- Make shapes with 3 corners.
- Make shapes with 4 corners.
- Make a small square, then a big square.
- Make a small square, then make a triangle in it.

Note: Activity Centre ideas 4, 5, 6, and 7 (which deal with polygons) also can be done on geoboards.

Ideas

The following are measurement of length activities.

Comparison Activities

1. Sort and Compare

Materials: Pencil crayons (two of each colour, varied lengths), placemat grid.

	Long	Short
red		
blue		
yellow		
green		

Task: Students find pairs of crayons by matching colours. Then they compare lengths and sort them onto the placemat according to colour and length.

Variation: Use various objects, such as ribbons, wool, straws, nails.

2. Nails

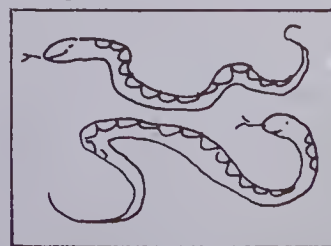
Materials: Box of nails, screws, bolts, etc., placemat for sorting, one medium-sized nail painted a bright colour.

Task: Students compare each object in the box with the coloured nail. If the object is longer, it is placed on the side of the mat labelled "longer", and so on.

Longer	Same length	Shorter

3. Snake

Materials: Cards with two snakes drawn on them, string, scissors.



Task: Students are to decide which snake is longer by cutting string to match the length of each.

4. Put in Order

Materials: Box of various lengths of straws, ribbons, elastics, paper clips, and nails.

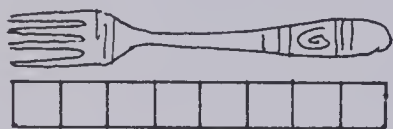
Task: Students sort the items according to type of object and then order them by length from shortest to longest.

Arbitrary Unit Activities

1. About How Many?

Materials: Blocks, paper clips, pennies, beans, worksheet for recording, objects for tracing and measuring.

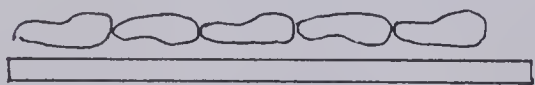
Task: Students trace an object for measuring. Using one type of measuring unit at a time, students trace a series of these units to match the length of the object, count the units, and record the number. They then try the same procedure with a different unit.



2. Footsteps

Materials: A traced foot (cut out of stiff paper or card), masking tape (of various lengths) stuck to the floor.

Task: Students use the traced foot to measure the length of a strip of tape. Show students how to mark the end of one foot length before lifting it to place it ahead of that mark. Students then check their measurement by walking along the line. Discuss what to do with the leftover lengths.

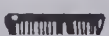



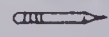

Using Measuring Devices

1. Block Train Rulers

Materials: Centimetre cubes joined to make a ruler about 25 cm to 30 cm long; objects for measuring.

Task: Students compare objects to their cube rulers, count, and record how many cubes equal the length of the object. They then record the length on a sheet.

The comb  is about  long.

The pencil  is about  long.

2. Body Tracing

Materials: Large sheet of paper, one child to act as a "model", pencil and papers, measuring tape.

Task: Trace a pupil as he or she lies on the paper. Measure a variety of parts of the pupil's body. Record these measures onto the traced figure. Once this has been done as an example, students can trace one another, measure parts, and record results. Distinguish between measures that go around the body (waist line) and ones that simply measure across (arm span) by using two types of markings on the reference chart, or labels such as "around my waist is cm", or "the length of my foot is cm".

3. Measuring with Centimetres

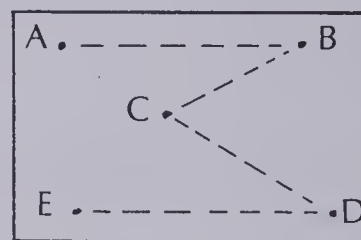
Materials: Centimetre ruler, a variety of items to be measured (pencils, crayons, scissors, books, chalkbrush, etc.); a worksheet with each item pictured on it for the students to record their measurements.

Task: Measure and write the number of centimetres.

4. Using a Ruler

Materials: Centimetre rulers, pencils, worksheet with 4 or 5 dots marked A to D or to E.

Task 1: Students are to use their rulers to try to join the letters, in order, with straight lines.



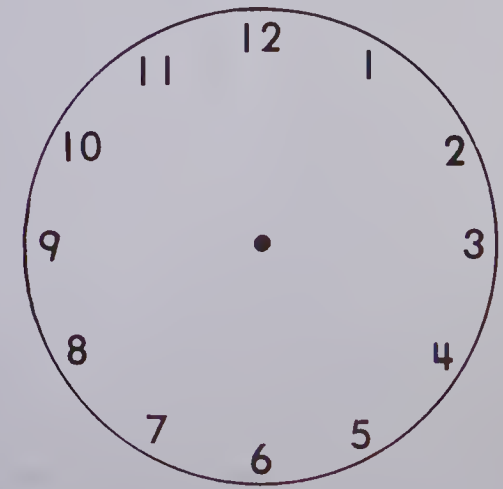
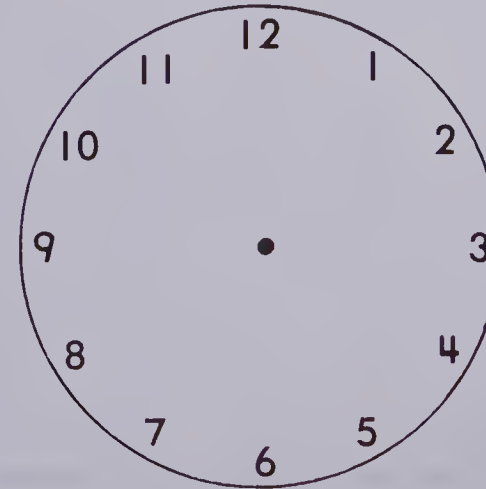
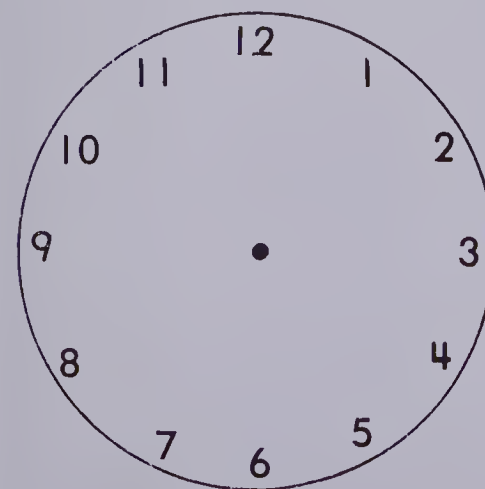
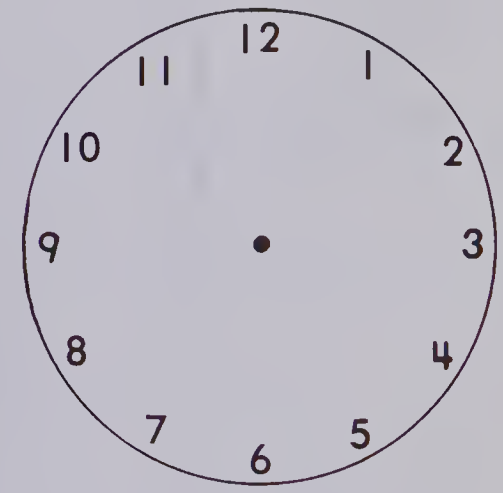
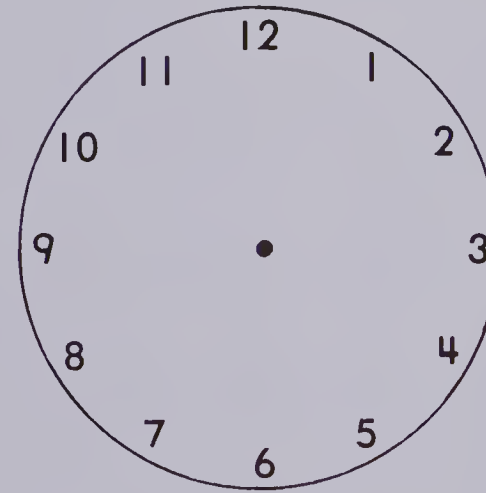
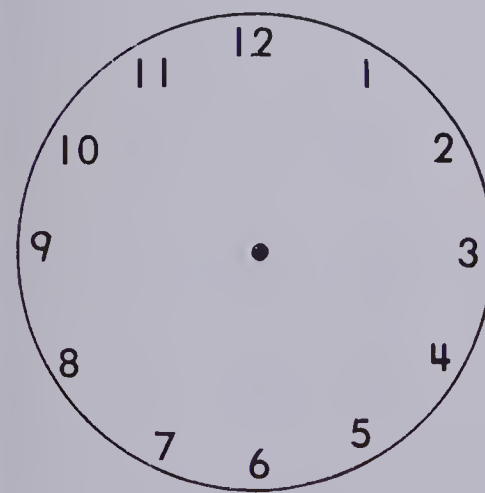
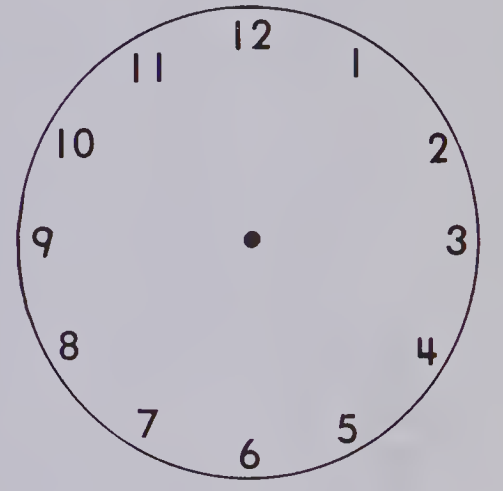
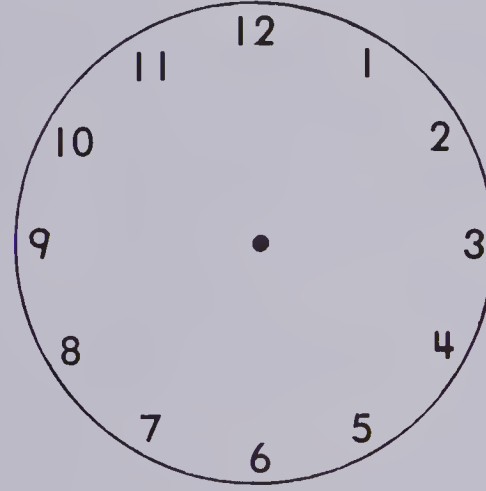
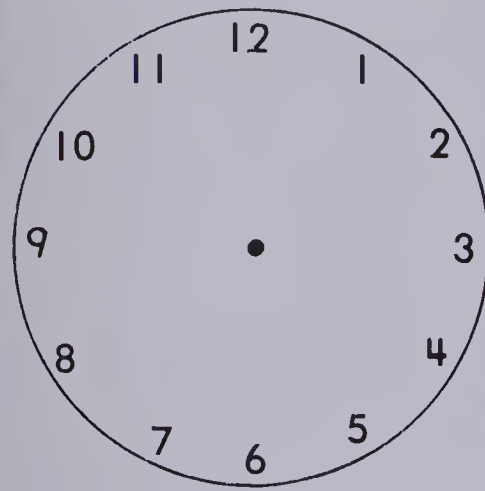
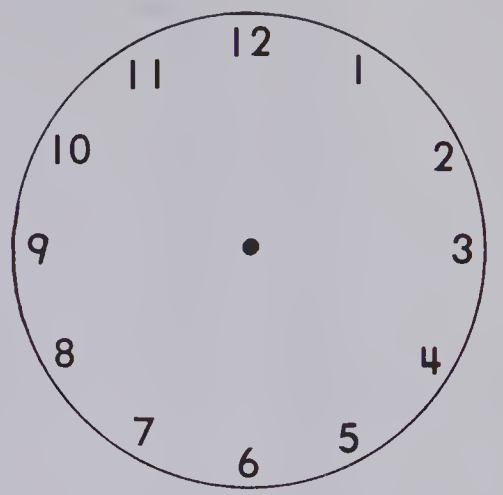
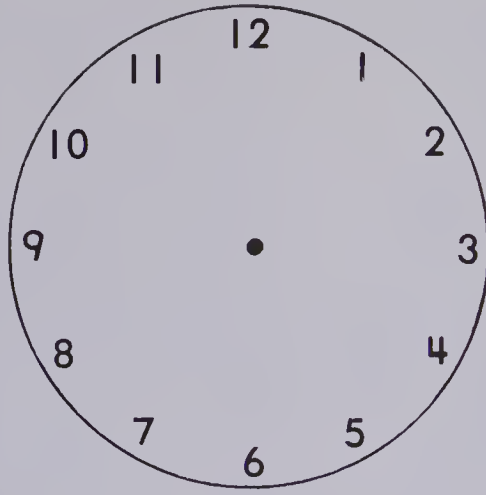
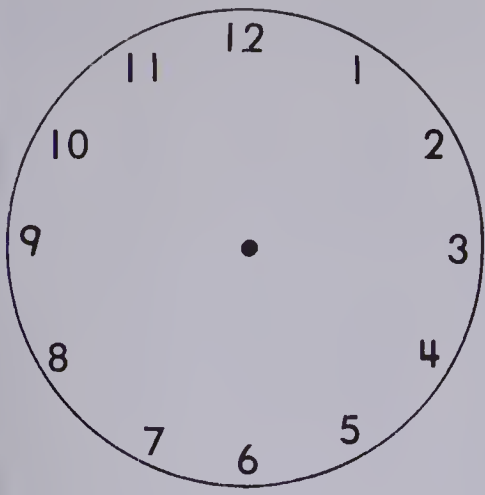
Task 2: Each of these lines can be measured and their lengths, to the closest centimetre, can be recorded on or above each line.

Variation: Provide blank papers. Ask students to draw lines of a certain length.

5. Measure your Name

Materials: Centimetre rulers, paper, pencils.

Task: The student prints his or her full name on a line and then measures and records the length in centimetres. The procedure is repeated using the names of classmates.



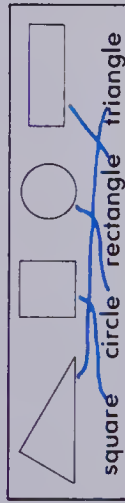
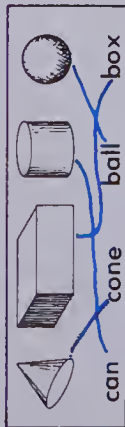
Calendar

Name _____

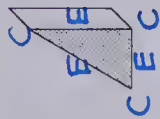
Pretest

Unit 8

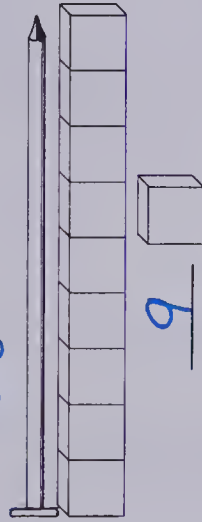
Match.



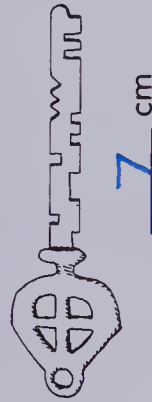
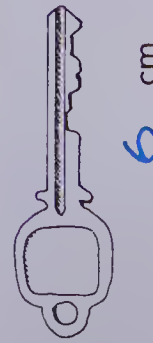
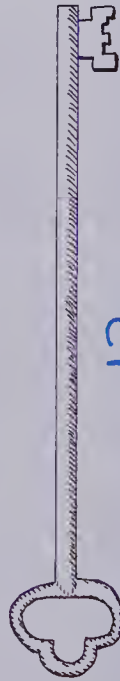
Put **C** on the corners of the coloured face.
Put **E** on the edges of the coloured face.



About how long?



Use your centimetre ruler.



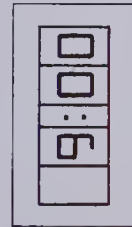
What time is it?



11 o'clock



1 o'clock



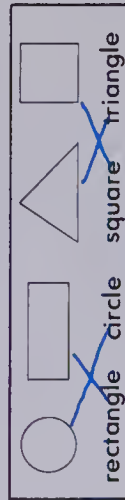
9 o'clock

Name _____

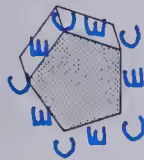
Post-test

Unit 8

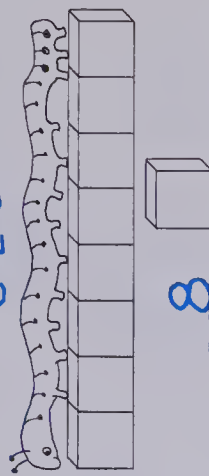
Match.



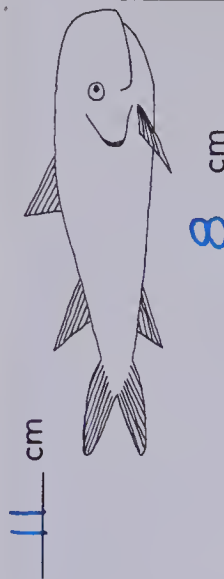
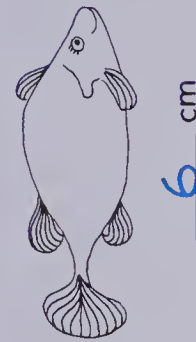
Put **C** on the corners of the coloured face.
Put **E** on the edges of the coloured face.



About how long?



Use your centimetre ruler.



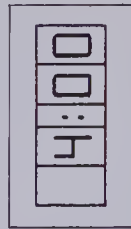
What time is it?



12 o'clock



10 o'clock



4 o'clock

UNIT 8 LESSON 1

Objective G1

Recognize boxes, cans, balls, and cones.

Vocabulary

Shapes, box, can, ball, cone, roll

Materials

Several boxes, cans, balls, and cones

Wooden board (25 cm × 60 cm)

Placemats

Introducing the Lesson

Give each student one of the four kinds of shapes you have collected. Ask each student to study his or her shape and tell you something about it. For example, "What does it look like? What colour is it? What shape does it have?"

Prop one end of the wooden board on top of three books. Take a ball and show how it rolls down the board. Take a box and show how it does not roll. Show the students how to classify shapes that roll and ones that do not roll by placing them on two labelled placemats.

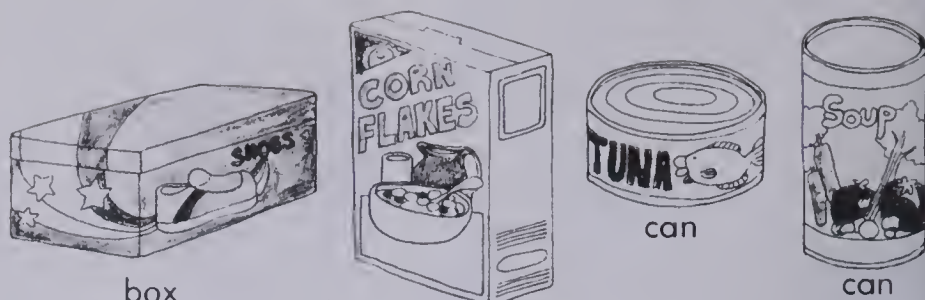


Teaching the Lesson

Collect the shapes and redistribute them so that each student has a different one. Set out four placemats labelled: box, can, ball, and cone.

Show a book. "What is the shape of a book similar to? On which placemat would we put it?" Show a pencil and a cone-shaped party hat. Ask similar questions as the students decide the placemat on which each belongs.

Have each student, in turn, place their shape on one placemat and explain why it belongs there. Encourage the students to use the terms box, can, ball, and cone as they describe their object. The use of phrases like "sharp corners", "smooth curves", "flat sides", and "does not roll" should be encouraged.



box

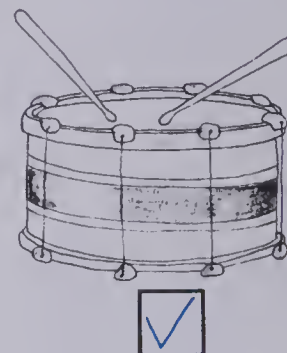
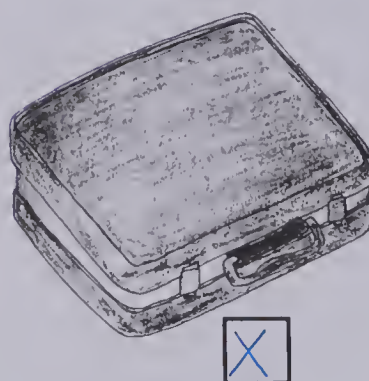
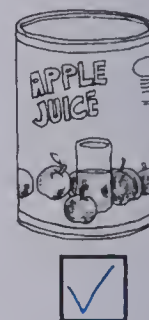
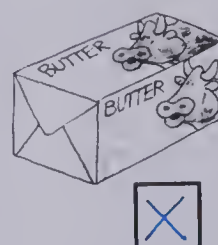
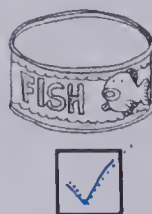
box

can

can

✗ each box.

✓ each can.



Boxes and cans

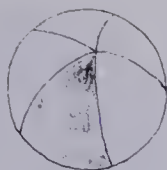
one hundred forty-one 141

Using the Pages

- Discuss the features of the two boxes and two cans at the top of page 141. Show the students how they are to mark an "X" for each box shape and a "✓" for each can shape.
- Follow the same procedure on page 142 as the students identify ball and cone shapes.



ball



ball



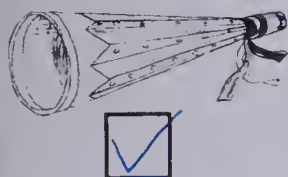
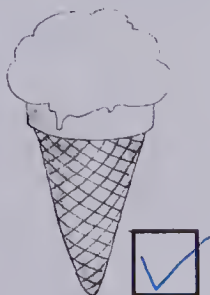
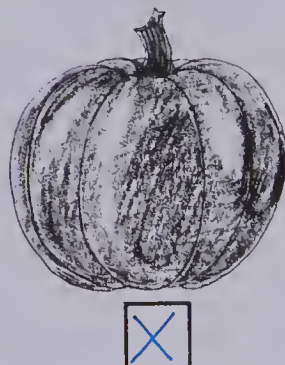
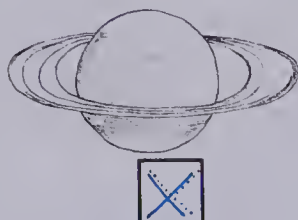
cone



cone

X each ball.

✓ each cone.



Reinforcement

1. Blindfold the students individually and ask each to describe, and then name, a shape you provide.
2. Provide old catalogs. Have the students cut out pictures of objects having the shapes discussed in the lesson. These cutouts can then be glued to one of four large charts labelled: box, can, ball, or cone.
3. Have the students make models of the four shapes with Plasticene. Display their work.
4. For further ideas, refer to the Geometry Activity Centre ideas listed in the introduction to this unit.

Enrichment

1. Look for box, can, ball, and cone shapes in the classroom.
2. Ask the students to make a drawing of a birthday party and to use each of the four shapes in their picture.

Extra Practice

Colour.

Worksheet G1

Pages 141-142



red



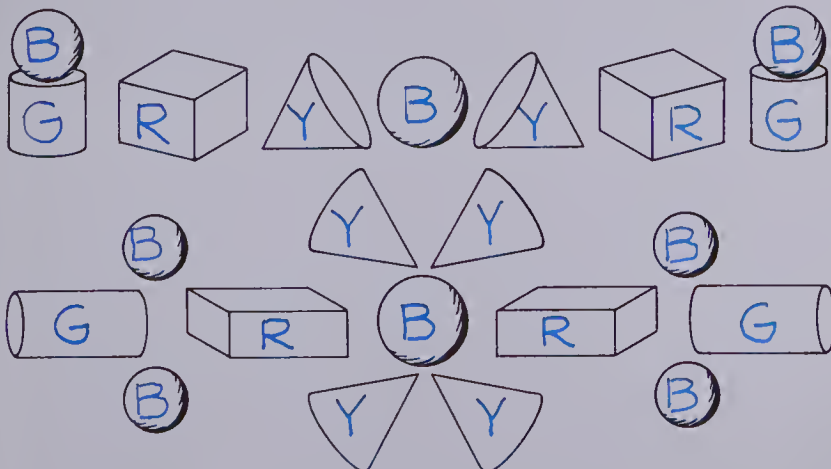
blue



yellow



green



Objective G2

Recognize circles and triangles.

Vocabulary

Circle, triangle, inside, outside, corners, sides, curved, straight
Direction words: Trace around. Write **T** in triangles. Write **C** in circles.

Materials

Rope (4 m long)
Cardboard triangles and circles
Crayons

Introducing the Lesson

Place the rope in the following types of patterns on the floor and ask some students to stand inside the shape.



Ask, "Can you get out (in) without crossing over the rope? Yes! Point out that these shapes do not have an inside or an outside. Now place the rope in the following types of patterns and ask some students to stand on the inside.

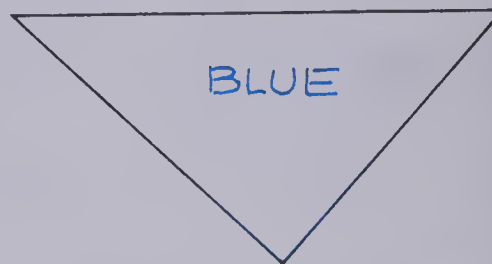
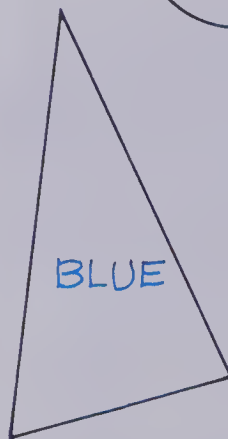
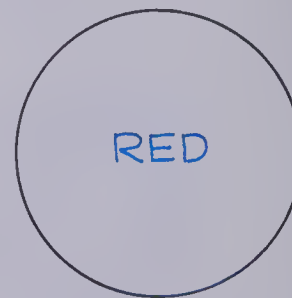
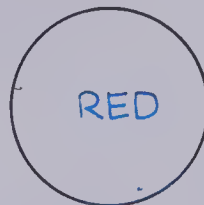
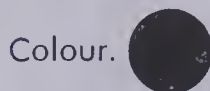
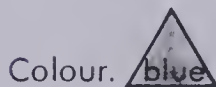
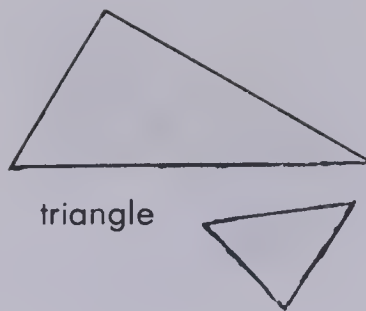


Ask, "Can you get out (in) without crossing over the rope?" No! Point out that these shapes have an inside and an outside.

Teaching the Lesson

Tie the ends of the rope. Three students pick up the rope in their right hands and pull it out to form a triangle. Ask, "How many students are pulling on the rope? How many corners? How many sides? Does it have an inside and an outside?" Have the students move their hands along the rope to form another three-sided shape. "Does it have 3 corners and 3 sides? Does it have an inside and an outside?" Tell the students that this shape is called a *triangle*.

Ask several students to form a circle holding the rope. Discuss the features of a circle and compare it to the triangle.

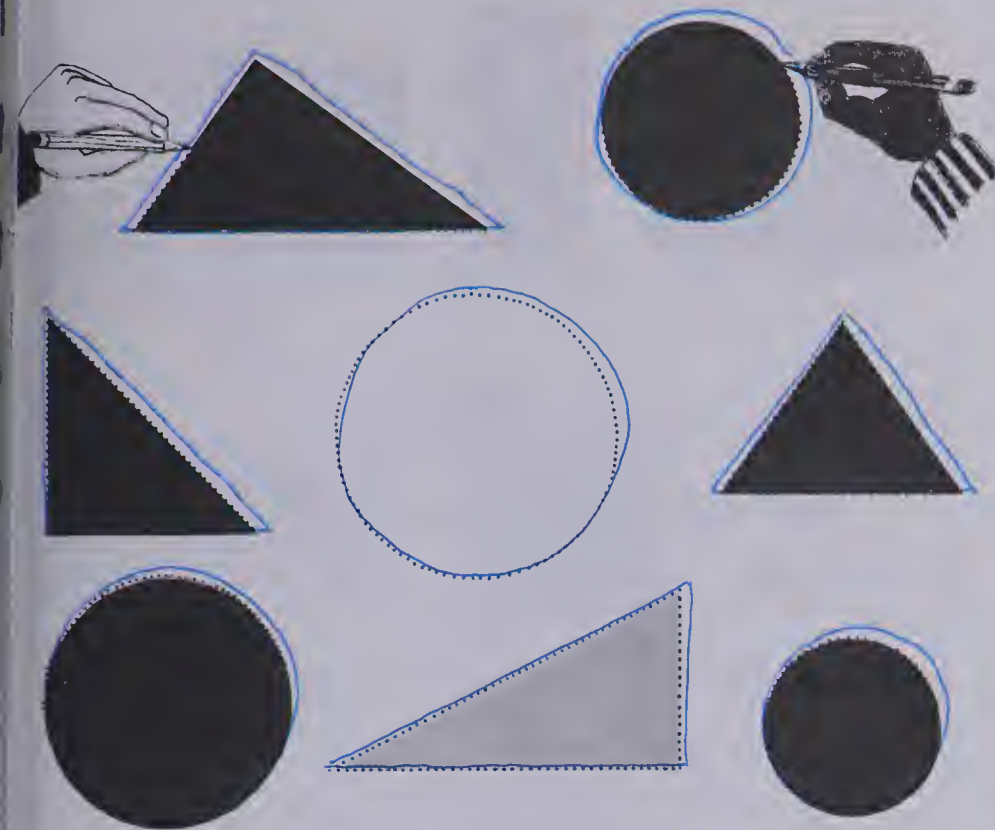


Triangles and circles

Using the Pages

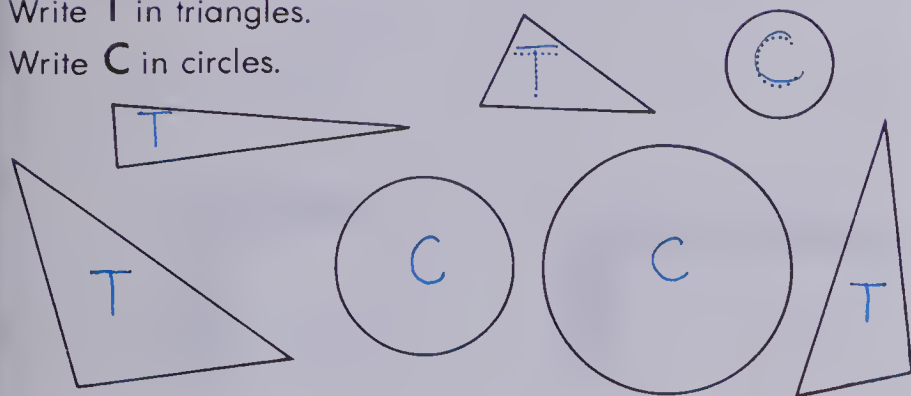
- Help the students get started with page 143 by colouring triangles and circles with red and blue chalk at the chalkboard.
- Show the students how to trace the triangles and circles at the top of page 144. Provide chalkboard practice in labelling triangles with a "T" and circles with a "C" before the students do, independently, the same activity at the bottom of page 144.

Trace around.



Write **T** in triangles.

Write **C** in circles.



144 one hundred forty-four

Triangles and circles

Reinforcement

1. Show several cardboard triangles and circles. Discuss these features with reference to each of them: inside and outside, corners, sides, curved and straight.
2. Give the students pipe cleaners to make triangle and circle shapes.
3. Prepare several cardboard triangles and circles. Have the students trace around these on construction paper to make designs.
4. Ask the students to order the cardboard triangles and the circles according to size from smallest to largest.
5. Give pairs of students two geo-boards and rubber bands. Have one student make a triangle for his or her partner to duplicate.

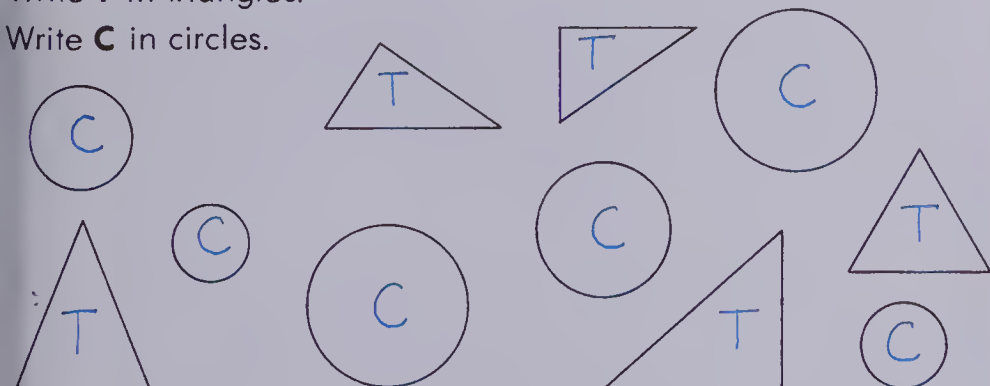
Enrichment

1. What comes next?
 - a. $\triangle \bigcirc \triangle \bigcirc \triangle \bigcirc$ \triangle or \bigcirc ?
 - b. $\bigcirc \triangle \bigcirc \triangle \bigcirc \triangle$ \triangle or \bigcirc ?
 - c. $\bigcirc \bigcirc \triangle \bigcirc \bigcirc \triangle$ \triangle or \bigcirc ?
 - d. $\triangle \triangle \bigcirc \triangle \triangle \bigcirc$ \triangle or \bigcirc ?
2. Give the students lengths of string. Ask them to make circles with the string and glue it to construction paper.

Extra Practice

Write **T** in triangles.

Write **C** in circles.



Worksheet G2

Pages 143-144

Objective G3

Recognize squares and rectangles.

Vocabulary

Square, rectangle, inside, outside, corners, sides, straight

Direction words: Colour all the squares green. Then colour the other rectangles blue.

Materials

Rope (4 m long)

Cardboard triangles, rectangles, and squares

Crayons

Introducing the Lesson

Place the rope on the floor in the following shapes. Talk about whether the shapes have an inside and an outside, have straight sides, or have corners.



Teaching the Lesson

Hold up a cardboard rectangle. "How many sides are there? Are they straight? How many corners are there? Does it have an inside?" Compare the features of the cardboard rectangle to a cardboard triangle.

Have four students make a rectangle with the rope.




Show a variety of cardboard rectangles. Talk about their features. Have the students look for rectangular shapes in the classroom.

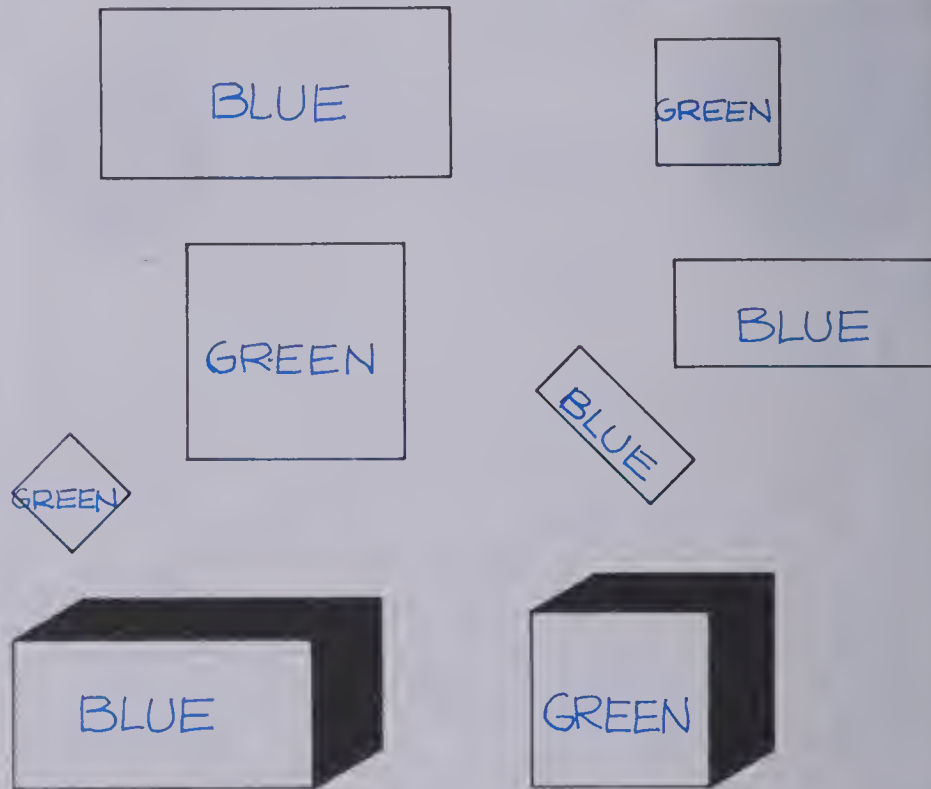
Hold up a cardboard square. "How many sides are there? Are they straight? How many corners are there? Does it have an inside? Is a square like a rectangle?" Point out that a square is a special kind of rectangle. See if the students can pick out the reason why it is special.

Hold up a mixture of cardboard squares and rectangles one at a time. Have the students tell you, in turn, the name of the shape.



Colour all the squares  green.

Then colour the other rectangles  blue.



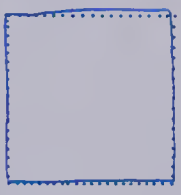
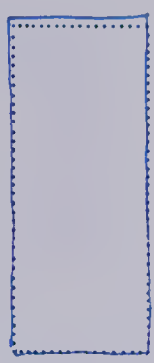
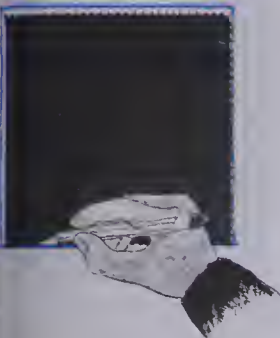
Rectangles and squares


one hundred forty-five 145

Using the Pages

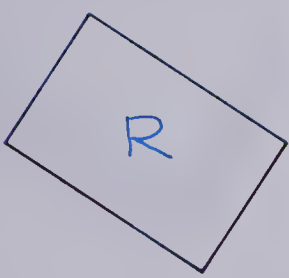
- Talk about the features of a rectangle and a square as the students look at the illustrations at the top of page 145. Then show them how to colour the squares and rectangles on the page.
- The students should first trace around the squares and rectangles at the top of page 146. Then show them how to write "S" on the square shapes and "R" on the rectangular shapes at the bottom of the page.

Trace around.





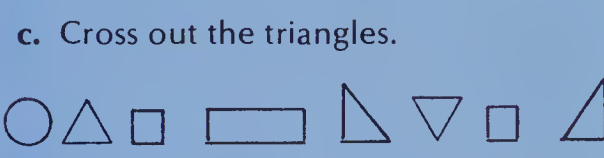
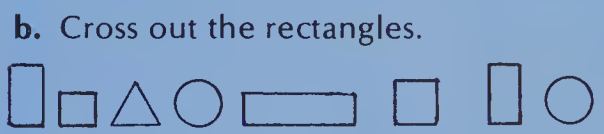
Write S in each .

Then write R in each .



Reinforcement

- 1. Mark index cards with  and . The students are to glue these cards on rectangle and square shapes in the room.
- 2. Students count rectangular and square shapes in the room. Are there more square or more rectangular shapes?
- 3. Have some students construct a square, a rectangle, and a triangle on the floor with masking tape.
- 4. Do the following worksheet.
 - a. Cross out the squares.
 - b. Cross out the rectangles.
 - c. Cross out the triangles.

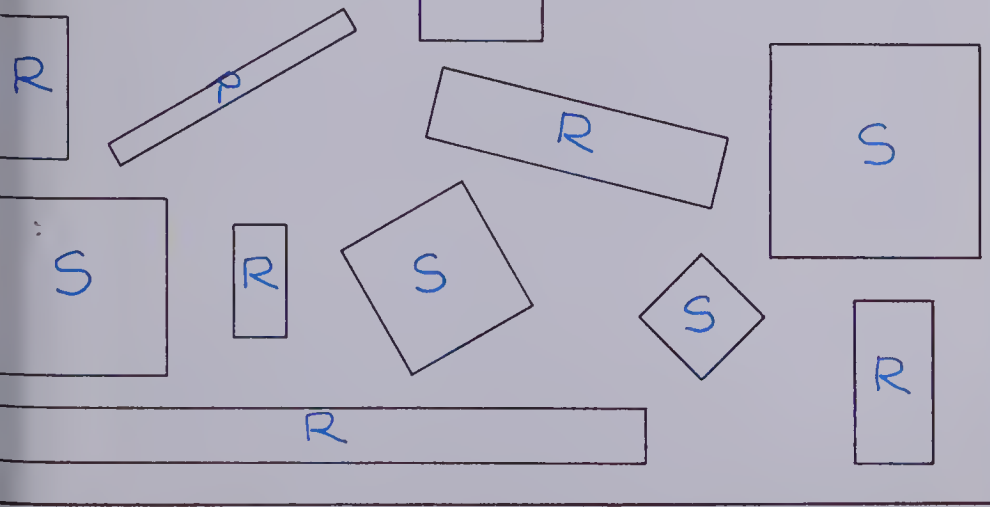


Enrichment

- 1. Use cutouts of squares, circles, rectangles, and triangles to make robots. The robots should be glued to construction paper and displayed.
- 2. Show the film "Dance Squared" by the Canadian National Film Board.

Extra Practice

Write S in each square.
Write R in each rectangle.



Worksheet G3
Pages 145-146

Objective G4

Recognize faces, edges, and corners.

Vocabulary

Face, edge, corner

Direction words: Colour the white faces. Put **C** on the corners of the yellow faces. Put **E** on the edges of the yellow faces.

Materials

Three-dimensional shapes

Crayons

Introducing the Lesson

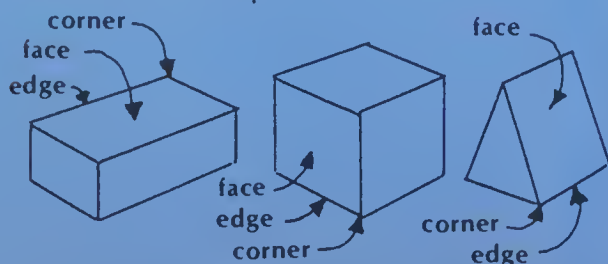
Give each student a three-dimensional shape. Have them study and say something about the shape, e.g., pointy, sharp, smooth, round, etc. "Does the shape have flat sides? Is the shape like a box, cone, can, or ball?"

Have the students look for another shape in the room that looks like his or her shape.

Teaching the Lesson

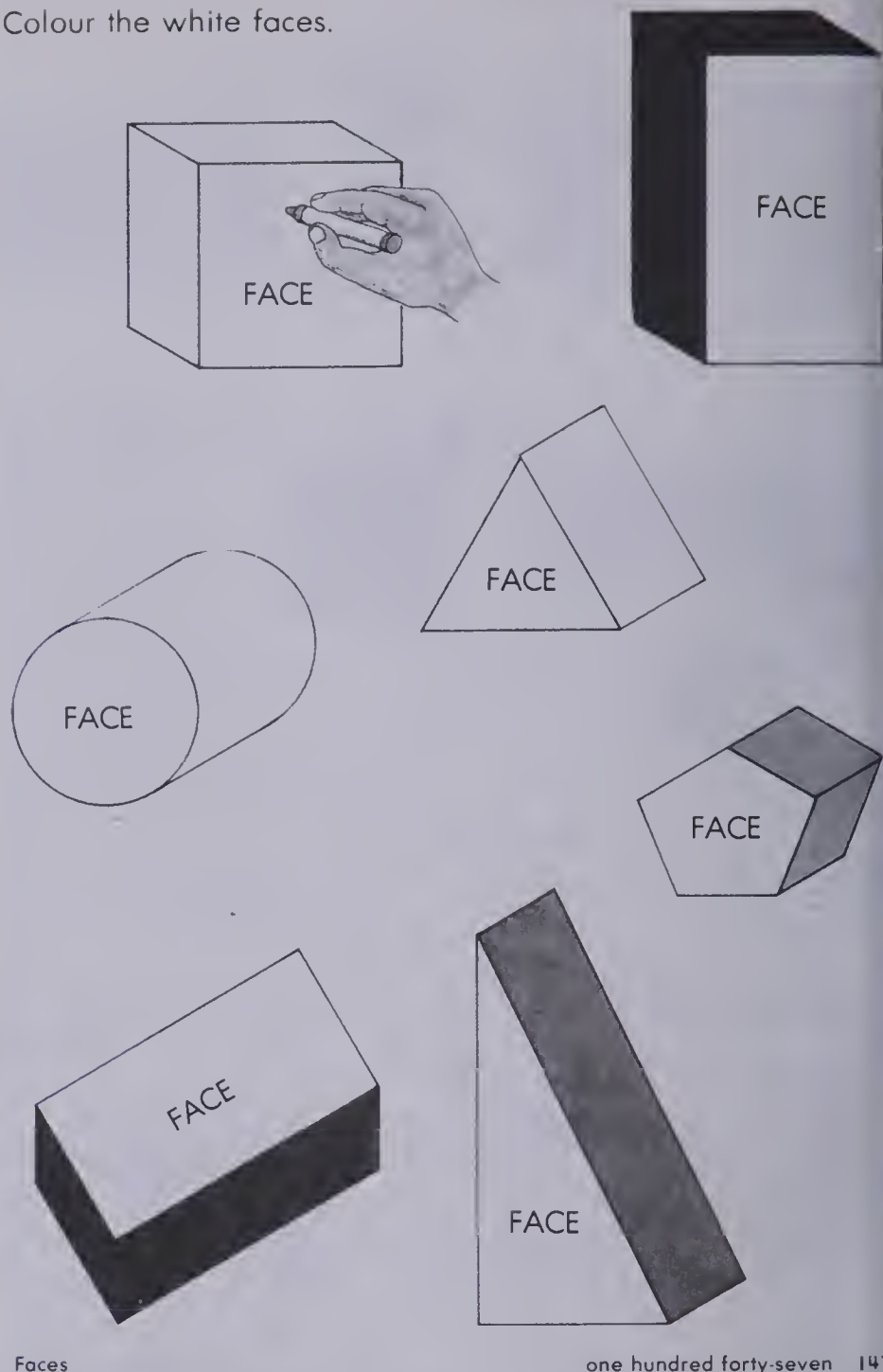
Place some of the three-dimensional shapes in a bag. Students take turns putting their hands in the bag, picking up a shape, and describing it without looking. Ask what they think it looks like. Do they feel corners? flat places? edges? Ask each student to take their shape and stand it on one of its corners. Then try standing it on its edges. The students should conclude that the shape will not stand on its corners or edges. Ask what it will stand on? *The flat side*. Point out that the flat sides are called faces.

Point out the meaning of faces, corners, and edges as you hold up and talk about several of the three-dimensional shapes.



Talk about some faces being triangles, circles, squares, or rectangles.

Colour the white faces.



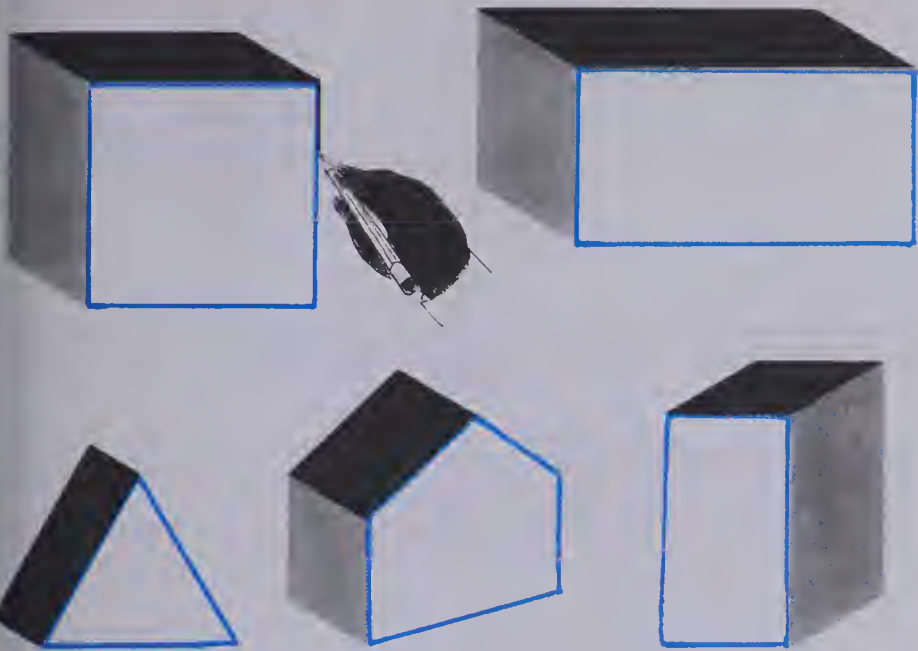
Faces

one hundred forty-seven 147

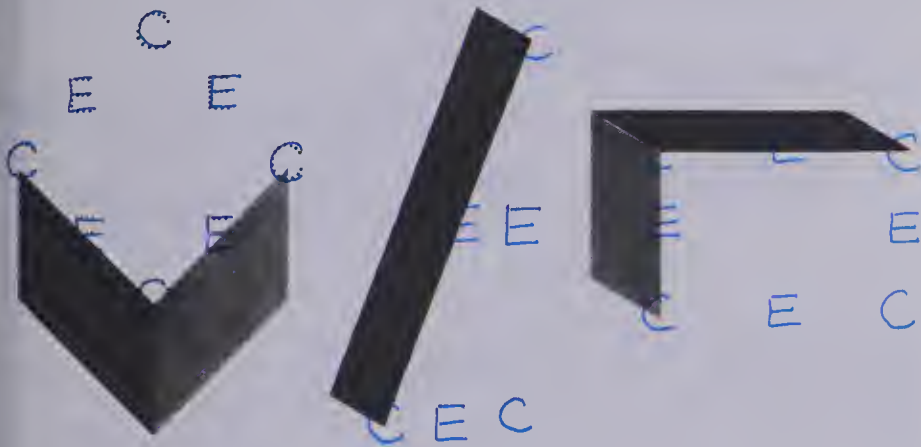
Using the Pages

- Talk about the three-dimensional shapes pictured on page 147. "What is the name of the shape of each white face? How many sides does each white face have?" Then, with a chalkboard example, show the students how they are to colour the white faces.
- Show the students how to trace around the blue faces of the three-dimensional shapes at the top of page 148. Help the students count and mark the edges and corners of the yellow faces at the bottom of page 148.

Trace around the blue faces.



Put **C** on the corners of the yellow faces.
Put **E** on the edges of the yellow faces.



Reinforcement

- 1. Give small groups of students a three-dimensional shape. Have them count the number of corners, faces, and edges of their shape.
- 2. Students trace the faces of a three-dimensional shape onto a piece of newsprint to make a design.
- 3. Give the students a variety of three-dimensional shapes. Have them sort the shapes according to the kind of faces they have, e.g., triangles, squares, or rectangles.

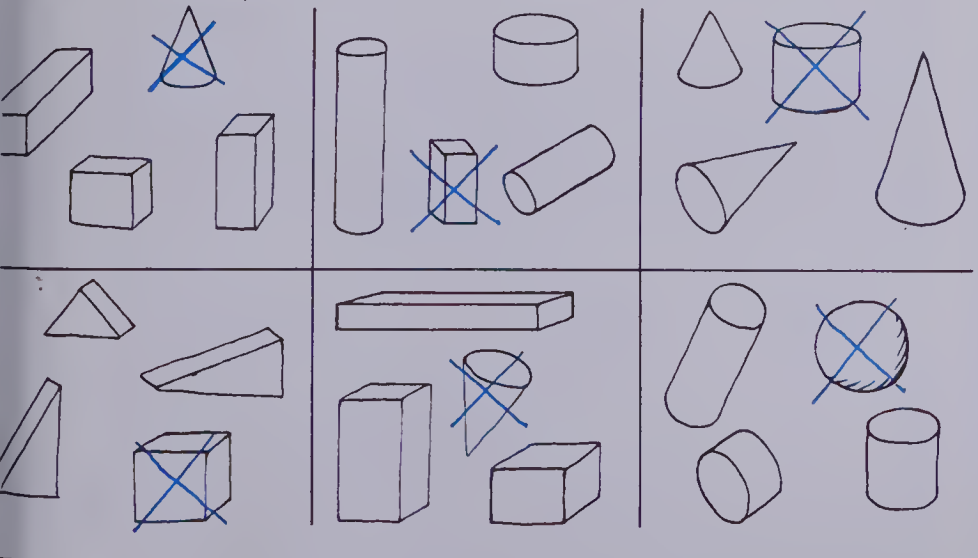
Enrichment

- 1. See the geoboard idea suggested in the Geometry Activity Centre at the beginning of this unit.
- 2. Have the students make cubes or triangular prisms out of pipe cleaners and straws. (See the Geometry Activity Centre ideas.)

Extra Practice

Worksheet G4
Pages 147-148

Cross out the shape that is not the same.



Objective M3

Compare lengths: shorter, longer, or the same.

Vocabulary

Shorter, longer, same, length

Direction words: Which is **longer**?

Which is **shorter**?

Materials

Classroom objects (crayons, chalk, pencils, etc.)

Paper strips

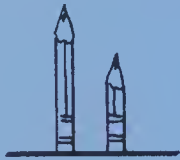
Construction paper

Crayons

Introducing the Lesson

Give pairs of students several objects of various lengths. Show them how to compare the *lengths* of two objects by lining up the ends on one side.

“Which is shorter? longer?”



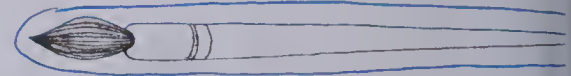
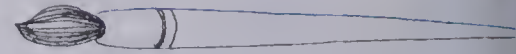
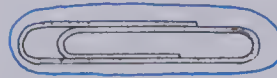
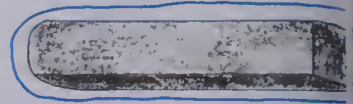
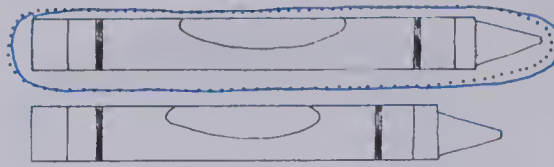
Give the students a strip of paper to use as a unit for comparison. Have them compare their objects to the paper strip and then sort them into three piles: *longer than*, *shorter than*, and the *same length*.

Teaching the Lesson

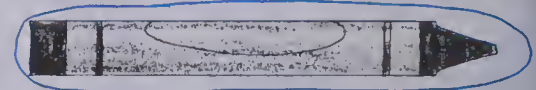
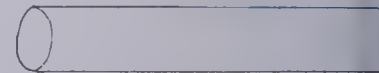
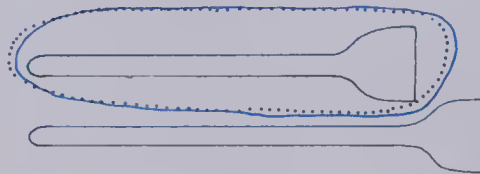
Have students place their hands on a sheet of paper and trace around two fingers. Have them identify the shorter and longer of the two fingers. Mark the longer with **L**, and the shorter with **S**. Have them repeat the activity with two other fingers.

Ask a medium-height student to come to the front of the room. Then have another student come forward. Compare heights and have the taller student stand to the left of the first student. Have another student come forward and decide where to stand according to height. Repeat with other students until the students are arranged in order from shortest to tallest.

Which is **longer**?



Which is **shorter**?



Longer, shorter

one hundred forty-nine 149

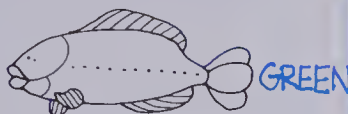
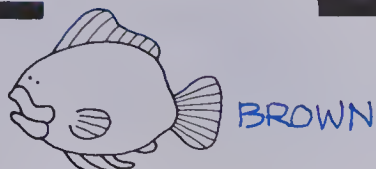
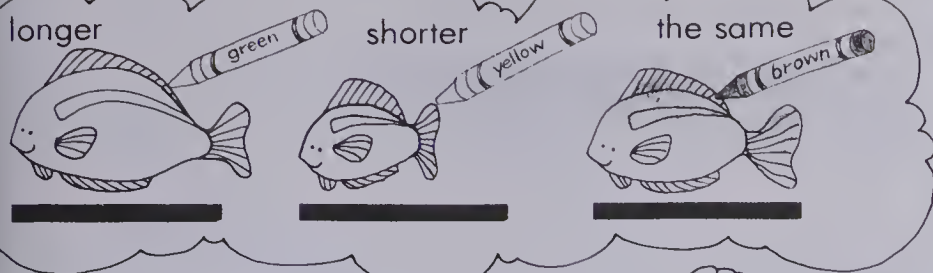
Using the Pages

- Explain to the students that they are to circle the longer object on the top of page 149 and the shorter object on the bottom of the page.
- As you talk about the activity on page 150, remind the students of the fishing game from the lesson. Show them how they are to colour the fish that are longer than the bar, green; the fish shorter than the bar, yellow; and the fish the same length as the bar, brown. Do several examples together.

longer

shorter

the same



150 one hundred fifty

Longer, shorter, the same

Reinforcement

1. Play a fishing game using a 20 cm strip of purple construction paper (to match the activity on page 150) and construction paper fish of different lengths. Tell the students that fish must have grown to a certain length in order to keep them. Otherwise they must be put back. Take turns comparing the lengths of the fish to the purple strip. If they are longer than the strip, put them in a pile to "keep". If they are shorter, "throw them back in". If they are the same length, "keep" them, but put them in a separate pile to emphasize the difference between "same length" and "longer than".

2. Put pairs of objects of different lengths into a box. Label two paper plates as longer and shorter. Have the students take turns finding a pair of objects, deciding which is longer and which is shorter, and then sorting them onto the appropriate plate.

3. Divide the students into groups of three. Send four groups to the chalkboard. Have one student in each group draw a line on the board. Then have one of the other students draw a line shorter than the first line, and the last student draw a line longer than the first. Repeat the above, letting each student have a turn drawing the first line.

_____ 1st line

_____ 2nd line

_____ 3rd line

Enrichment

This game is played by two students. Each student has six strips of paper of various lengths. A spinner is provided which has two parts labelled **L** and **S**. Each player places a strip of paper on the table and the spinner is turned. If the arrow points to **L**, the student with the *longer* strip takes both strips. If **S**, the student with the *shorter* strip takes both strips. Play continues until one player has all the strips.



Extra Practice

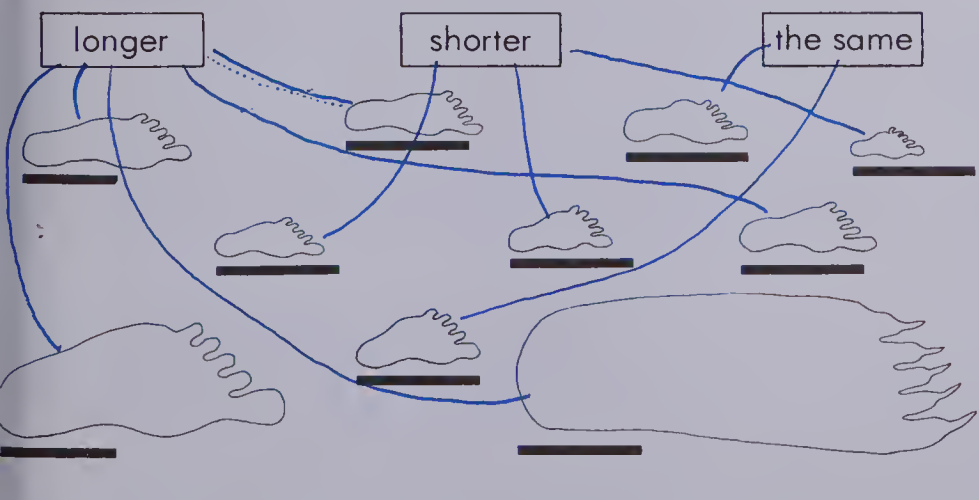
Match.



longer

shorter

the same



Worksheet M3

Pages 149-150

Objective M4

Measure length using nonstandard units.

Vocabulary

Long, length

Direction words: About how long is each ribbon?

Materials

Paper strips (5 cm)

Crayons

Introducing the Lesson

Two types of measuring activities are included in the lesson:

1. using a set of objects to measure the length of an object (as on page 151)
2. using one object as a unit, moving it end to end, and counting the repeated units (as on page 152).

The first type, where students can actually see and touch all of the units, is an introductory measuring activity and should precede use of the second method. You may prefer to do each type as a separate lesson.

Teaching the Lesson

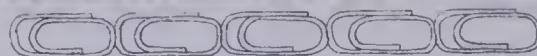
Provide strips of coloured paper approximately 5 cm long for students to use for measuring longer lengths. Have them lay these end to end to measure a desk top. Ask how many units long the desk is as the students count.

Draw a 30 cm line on the chalkboard. Show students how this one unit can be traced repeatedly to measure a length. Have the students count the tracings as they measure the length of the chalkboard.

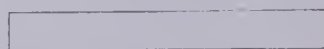
Give students a chance to try tracing a unit (such as a paper clip) to measure length. Provide paper with lines to be measured. As one student traces the paper clip, have a partner count the units.

Measure a variety of objects, using one unit repeatedly. Ask the students to count how many times the unit is used, then say, e.g., "The ruler is 6 crayons long."

About how long is each ribbon?



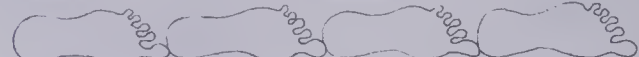
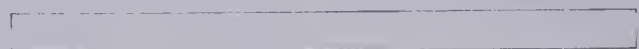
5



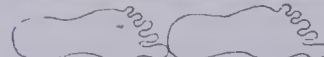
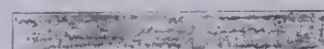
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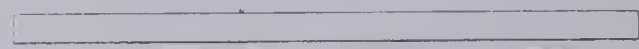
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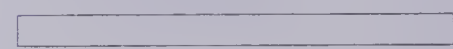
4



2



10



7

Length

one hundred fifty-one 151

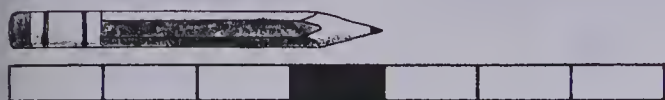
Using the Pages

- Provide each student with units of some type: paper clips, centimetre cubes, etc. Show how to line up the units end to end to measure length. Discuss why they should touch. Have the students measure several objects with the units. Discuss differences in length. Record the lengths on the chalkboard.
- On page 151, discuss what is being measured and what types of units are used. Do the entire page orally first, counting together and discussing the lengths of each coloured ribbon. Then have the students try the page independently, counting and recording lengths in arbitrary units.
- For page 152, have the students colour the units that should be counted to measure each object. The last unit is already coloured in the first five examples, but students must decide on their own where to stop for the last three examples. You may prefer to do this page as an oral, guided lesson.

About how long?



6



4



7



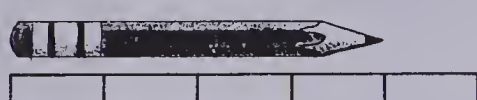
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5



6



4



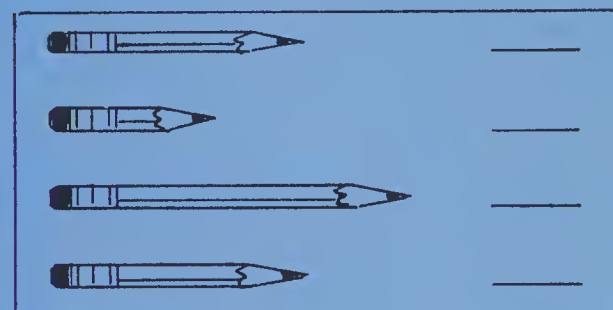
3

152 one hundred fifty-two

Length

Reinforcement

1. To practise using a set of units to measure length, give each student a set of pennies or blocks to line up, count, and record lengths on a worksheet. The same worksheet can be used with a variety of measuring units. The students should draw a picture of the unit they used to check their measurement count. Ask the students to show you how they measured one of the lengths.



2. Give students one paper clip and the same worksheet as above. They can trace around the clip or simply mark the end of the unit before moving the clip. Check the responses as a group if everyone used the same size clip.

For practice using a measuring tape, make paper clip chains to use with the same worksheet.

3. Glue a set of coloured, 5 cm strips end to end onto a longer strip to make a measuring tape. Use it to measure objects. Give each student a chance to place an object next to the tape and count how many units long the object is.

Enrichment

1. To encourage students to estimate length, provide a worksheet with room for an estimate and an actual measure. To make the worksheet more versatile, have the students draw the unit so that different units can be used.

Object (measured in)	My guess	Length
	_____	_____
	_____	_____
	_____	_____
	_____	_____

2. Read the book, *The King Needs a Bed*, to the class.

Extra Practice

Worksheet M4

Pages 151-152

About how long?



7



10



4



12



9



8

Objective M5

Measure length using centimetre units.

Vocabulary

Centimetre, cm, ruler

Direction words: Use your centimetre ruler to measure each straw.

Materials

Centimetre paper strips (15 cm)

Centimetre rulers

Introducing the Lesson

Give each student a sheet of paper and have them trace the width of their index finger along the edge of the paper. Ask students to count the number of fingers traced across the page. Ask how long the paper is in fingers. List the numbers on the chalkboard. Ask why the numbers are not all the same. Help the students to see that we need measuring units that will be the same for all people.



Teaching the Lesson

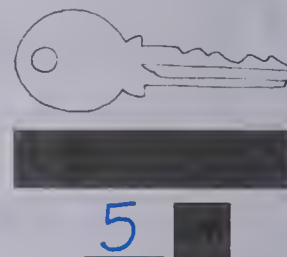
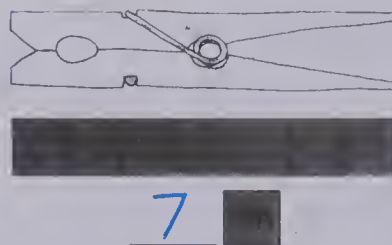
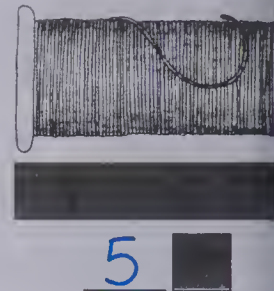
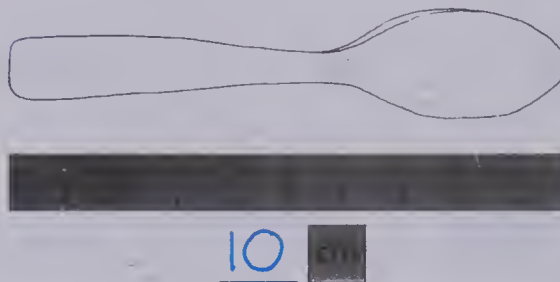
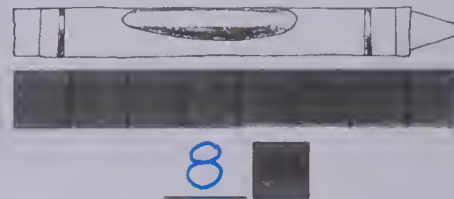
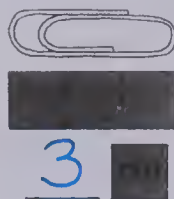
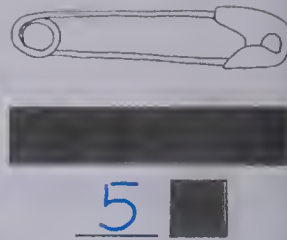
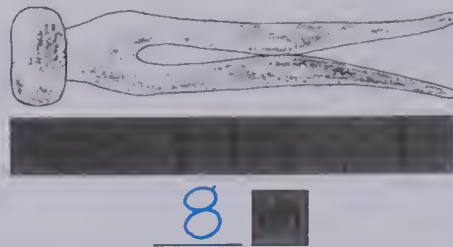
Give each student a centimetre paper strip. Ask them to place their finger on the first square on the left and compare the finger to the size of the square. Tell the students that this square is *one centimetre* long. Write **1 cm** on the chalkboard. Tell the students that **cm** is the short name for **centimetre**.



Ask the students to shade in the centimetre strip to show 1 cm shaded, then 2 cm, 4 cm, 6 cm, and 9 cm.

Give the students objects like a crayon, short pencil, eraser, etc. to place on the strip of paper and count the number of centimetres long it is. Show them how to record the lengths.

About how long?

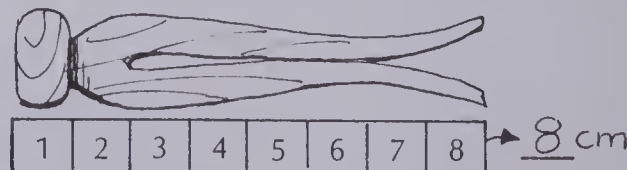


Centimetre

one hundred fifty-three 153

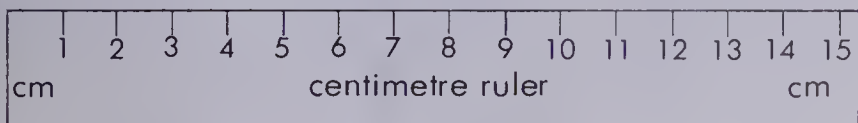
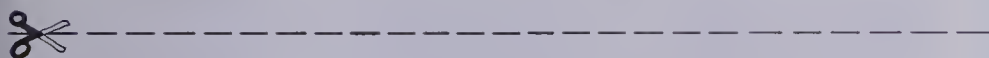
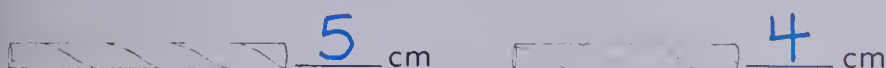
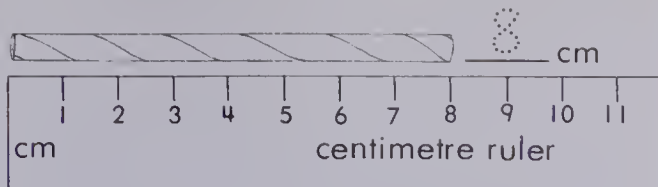
Using the Pages

- On page 153, explain to the students that they will be measuring the length of items such as clothes pins, crayons, spoons, etc. using centimetres. Show them how to count the number of squares and write their count in each square. The number written in the last square is then written in the blank space in front of cm.



- Ask the students to cut out the centimetre ruler at the bottom of page 154. (They should be sure to cut around the **yellow ruler** not the pink one on the reverse side.) The ruler can be glued on a card to provide extra stiffness and trimmed. Have the students place the ruler on top of the ruler at the top of the page and check the measurement of the straw. Show them how to measure the rest of the straws on the page in the same way.

Use your centimetre ruler to measure each straw.

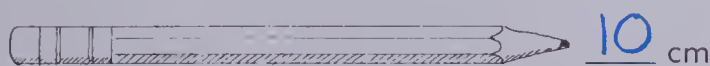


154 one hundred fifty-four

Centimetre

Extra Practice

Use a centimetre ruler to measure each pencil.



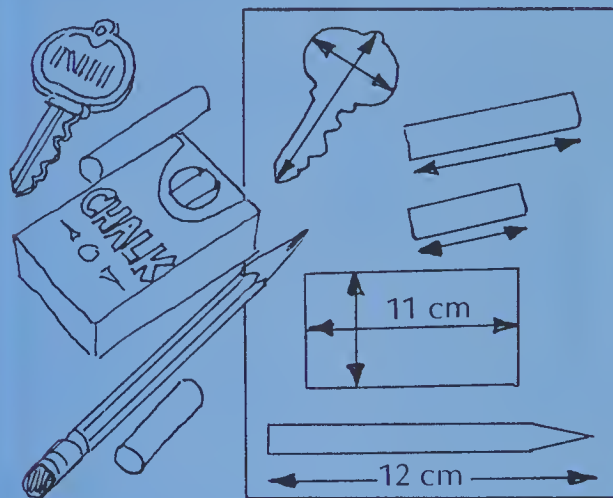
Worksheet M5

Pages 153-154

Reinforcement

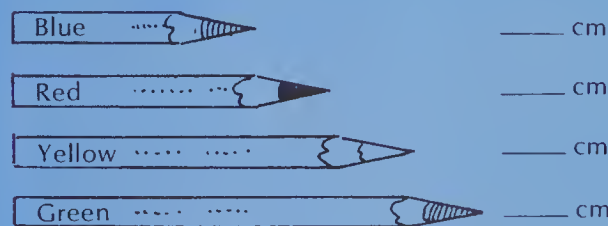
1. Provide an assortment of objects to measure in centimetres with a centimetre ruler. Have the students record the lengths on paper. Check the answers together, discussing possible answers for lengths that are not exact. Some students may benefit from measuring first with a row of centimetre cubes.

2. Provide paper, pencils, and a set of objects to trace and measure. Show students how to draw a line to show which way they can be measured and record the number of centimetres on that line.



Enrichment

Ask students to arrange four or five pencils in order of length from shortest to longest. Measure each pencil and record the length.



UNIT 8 LESSON 8

Objective M6

Tell time to the hour.

Vocabulary

Hour, minute, o'clock, time, clock
Direction words: What time is it?

Materials

Stop watch
Alarm clock
Large cardboard clock
Digital clock
Worksheet of blank clocks

Introducing the Lesson

Discuss units of time from years down to seconds. Ask which unit of time should be used to measure a variety of lengths of time.

- walking to school (minutes)
- taking out your pencil (seconds)
- sleeping at night (hours)

Set a stop watch for one minute. Have the students try a variety of ways of spending one minute (sit with eyes closed, count softly, print the alphabet, join Unifix cubes, etc.).

Set an alarm clock for one hour. Start at 9:00, setting it every hour. Record on the chalkboard what the class is doing on the hour all day.

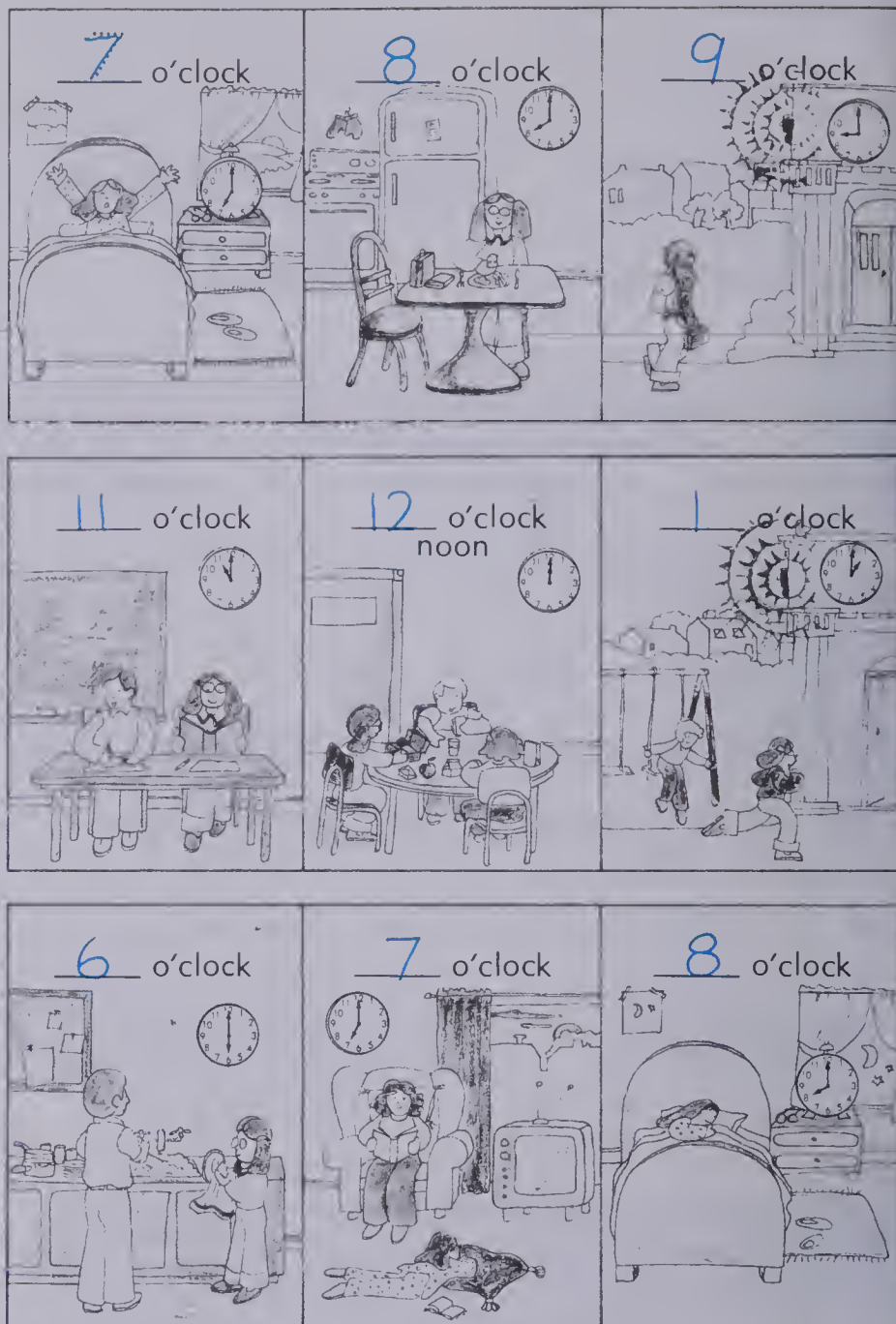
Teaching the Lesson

Draw a large circle on the chalkboard. Make twelve marks for the hours. Point to the top mark and ask what numeral goes there. Do the same for 3, 6, 9, and then the other numerals.

Show a large clock with moveable hands. Discuss the minute hand and hour hand. Explain that today we are focusing on the hour, so the minute hand will stay at "o'clock" or "on the hour".

Talk about what time the students do certain activities and move the hour hand to show that time.

Look at a digital clock. Discuss the differences between both types of clock.



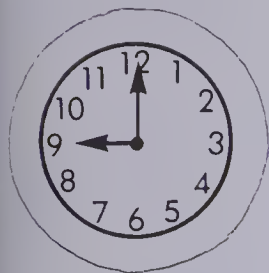
Time to the hour

one hundred fifty-five 155

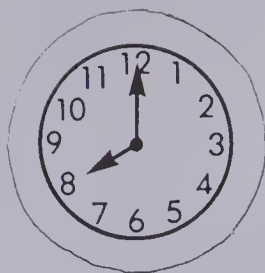
Using the Pages

- For page 155, discuss the times shown in each illustration and the times students do each activity. Point out the clock in each picture. Demonstrate how to read and record times.
- The pictures on page 155 can then be cut out, mixed, and ordered by time. The reverse side can be used for checking each time.
- For page 156, read and record each time as given on the clock faces.

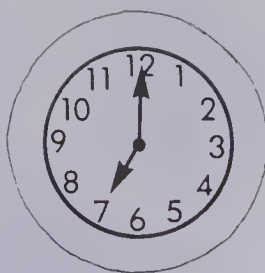
What time is it?



9 o'clock



8 o'clock



7 o'clock



1 o'clock



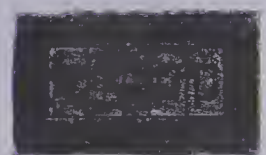
12 o'clock



11 o'clock



8 o'clock



7 o'clock



6 o'clock

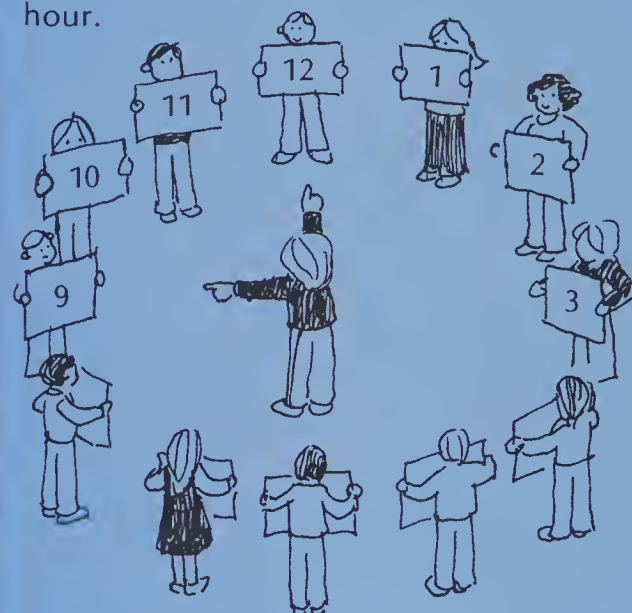
156 one hundred fifty-six

Time to the hour

Reinforcement

1. Ask the students to come up and move their arms like the hands of a clock for certain times. Record these times on the chalkboard, showing the :00 notation, and the o'clock format.

2. Write the numbers 1 to 12 on pieces of paper. Give one number to each of twelve students. Have them form a circle to make the face of a clock. Call on a student to stand in the centre and show designated times by stretching out his or her arms. One arm should point towards 12 and the other to the hour.



9 o'clock

3. Give a clock worksheet (provided with this *Teacher's Resource Book*) and an hour hand to each student. Have them colour in the numerals in order. Show where each numeral belongs. Have students draw in the minute hand, pointing to 12. Call out times for the students to show by moving their hour hand into position.

Enrichment

Students draw a picture of something they do everyday and include a clock showing the time it takes place. Ask the students to try to include something in the picture to suggest morning, afternoon, or night.

Ask the students to check the time of their favourite T.V. programs. Talk about the programs and then list them with their times on the chalkboard.

Extra Practice

Worksheet M6

Pages 155-156

What time is it?



3 o'clock



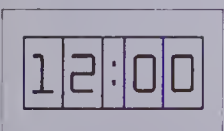
10 o'clock



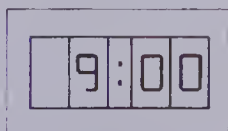
4 o'clock



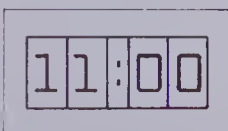
2 o'clock



12 o'clock



9 o'clock



11 o'clock

UNIT 8 LESSON 9

Objective M7

Tell time to the hour.

Vocabulary

Hour, minutes, hour hand, minute hand, o'clock

Materials

Time flash cards:

1 o'clock and 1:00

Large cardboard clock

Real clocks

Red and blue crayons

Worksheet of blank clocks

Introducing the Lesson

Flash the time cards. Students take turns reading a card and showing that time on a large clock face.

Have the students match cards as in

4 o'clock and 4:00

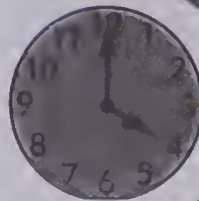
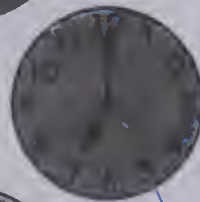
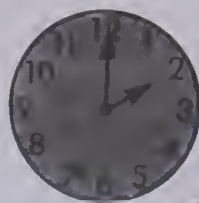
Teaching the Lesson

Draw several large clock faces with the 12, 3, 6, and 9 in place. Ask the students to come up and complete the clock faces. Ask others to come up and show the hands for various times on the hour. Other students can come up and record the times.

Discuss the differences between the two kinds of clock hands using the display clock and real clocks. Emphasize the hour hand but also show how the minute hand moves around during each hour.

Use the blank clock face worksheet (provided with this *Teacher's Resource Book*) to have students practise showing specific times. Show both the 6 o'clock and the 6:00 type of flash cards. Students then read the cards and show that time on their clocks.

Match.



6 o'clock

2 o'clock

9 o'clock

12 o'clock

4 o'clock

11 o'clock

7 o'clock

6:00

9:00

4:00

11:00

2:00

12:00

7:00

Time to the hour

one hundred fifty-seven 157

Using the Pages

- On page 157, students are to read each clock face and find two cards to match the face. Do two examples together.
- On page 158, discuss the differences in length and meaning of the two hands. Show students how to find the hour hand, colour the hands, and record the times shown.

I show
the
hour.

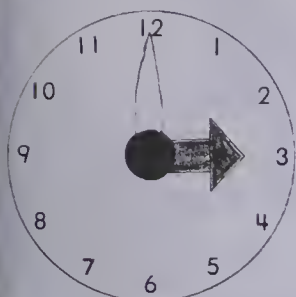


Colour me red.

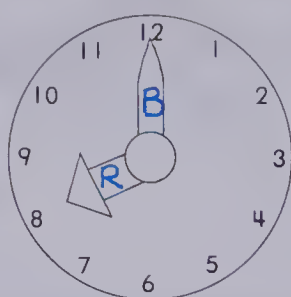
I show
the
minutes.



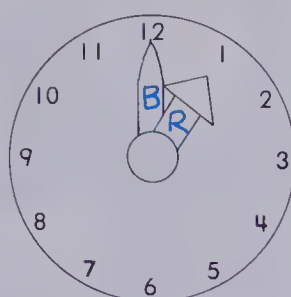
Colour me blue.



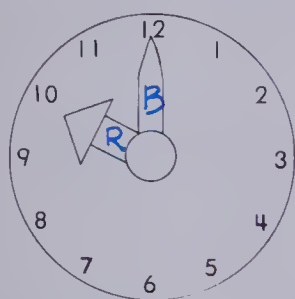
3 o'clock



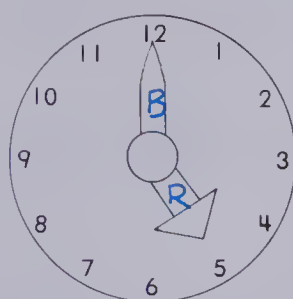
8 o'clock



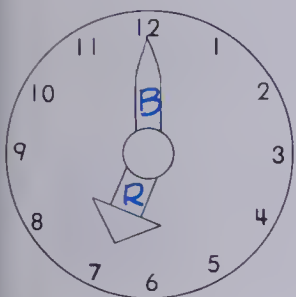
1 o'clock



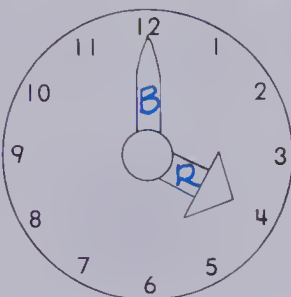
10 o'clock



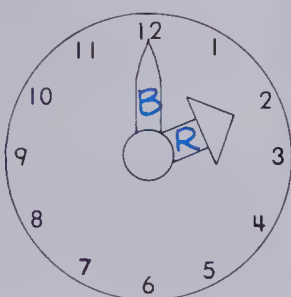
5 o'clock



7 o'clock



4 o'clock



2 o'clock

158 one hundred fifty-eight

Hour hand, minute hand

Extra Practice

Draw the hour hand.



5 o'clock



10 o'clock



1 o'clock



11:00



7:00



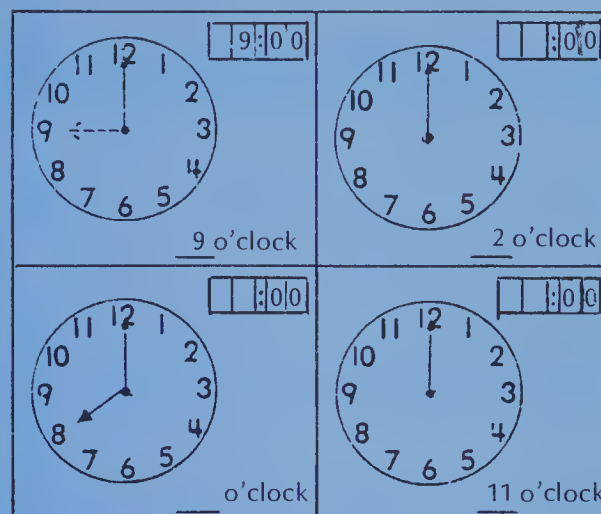
2:00

Worksheet M7

Pages 157-158

Reinforcement

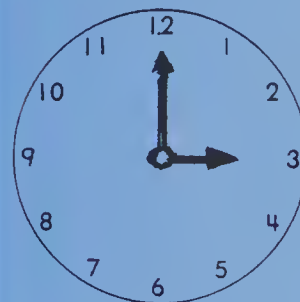
Ask the students to fill in all that is missing for each set.



Enrichment

Have the students complete the following worksheet.

a. Show the time one hour later.

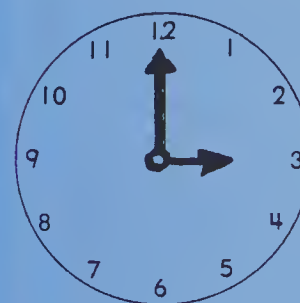


3 o'clock
_ o'clock

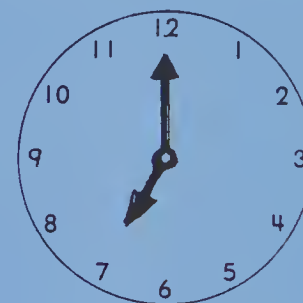


5 o'clock
_ o'clock

b. Show the time two hours later.



3 o'clock
_ o'clock



7 o'clock
_ o'clock

Objective M8

Name the days of the week; fill out dates on a calendar.

Vocabulary

Sunday, Monday, Tuesday, ..., Saturday, calendar

Direction words: Make a calendar.

Materials

Large blank calendar

Introducing the Lesson

Talk about how we keep track of time. Point out that we use clocks to keep track of short periods of time, like minutes and hours, and we use calendars to keep track of longer periods of time like days, weeks, and months.

Teaching the Lesson

Have the students recite the days of the week a few times. "How many days of the week are there?" *Seven.* "Which day comes after Monday?" *Tuesday.* "Which day comes before Sunday?" *Saturday.* "On which days do we usually go to school?"

Write the name of the month at the top of the calendar. Have the students say the names of the twelve months aloud together.

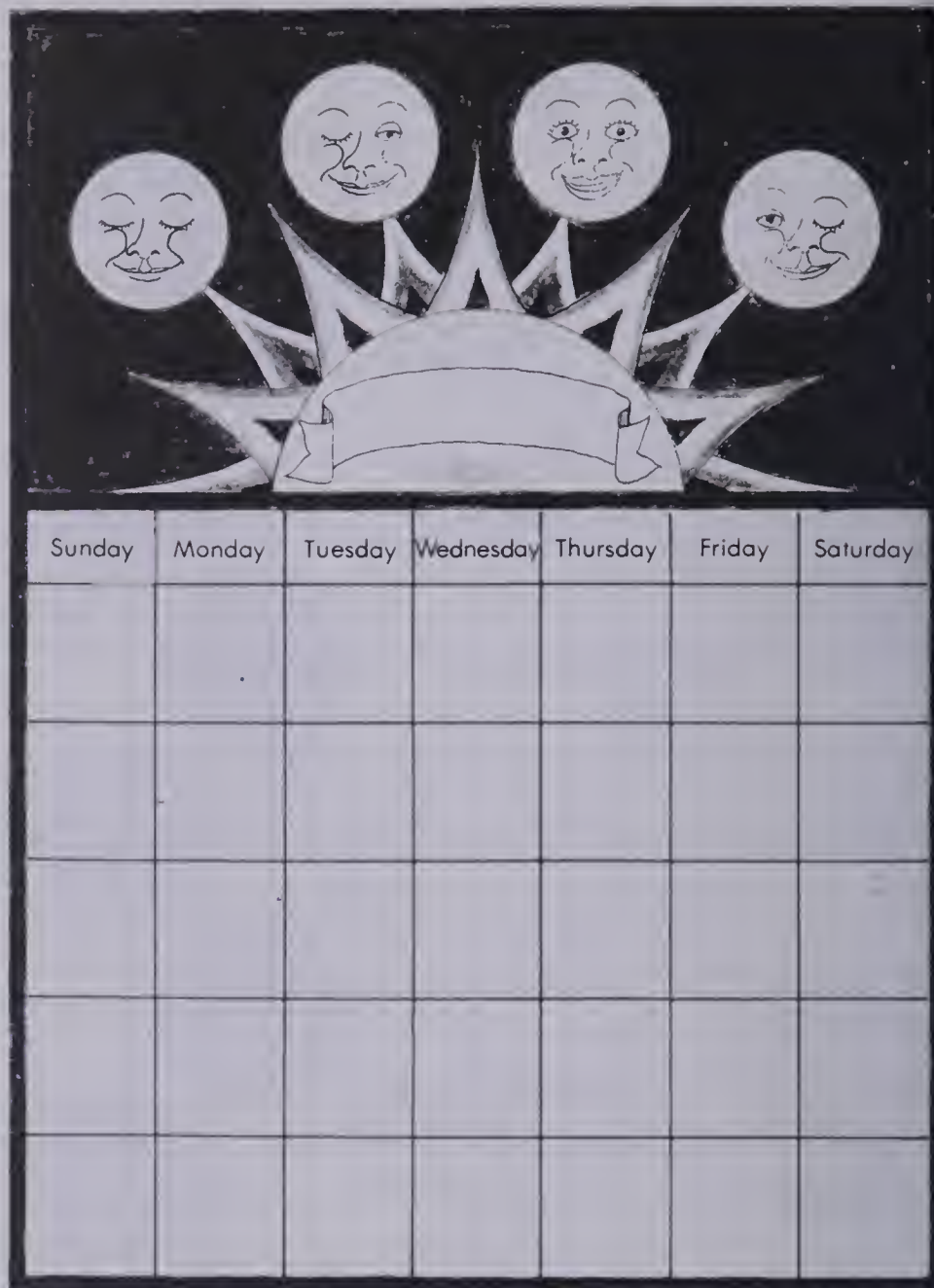
Each morning have one student fill in the date for that day in the correct square on the calendar. You may want students to mark in special days of the month such as holidays. Students' birthdays may be marked with a cake and the student's name.

Reinforcement

After the calendar is filled in for the month, ask these questions.

- How many days in this month?
- How many Sundays in this month?
- How many Mondays, Tuesdays, Wednesdays, Thursdays, Fridays, Saturdays in this month?
- How many birthdays in this month?
- How many holidays in this month?
- How many school days in this month?

Make a calendar.



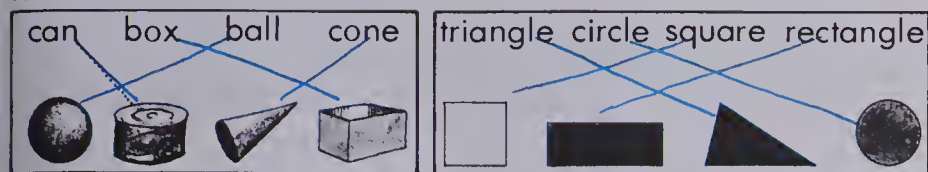
Calendar; days of the week

one hundred fifty-nine 159

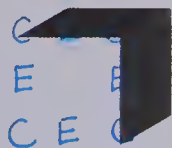
Using the Page

- Use page 159 as an oral guided lesson in completing a calendar. Students may tape the calendar page to their desk after they complete it, or as they fill in the date for each day as it occurs. Students have been formally taught counting only up to 20, so they may need coaching to fill in the days past the 20th.
- This lesson is an ongoing lesson and can be carried out each day, week, and month left in the school year. Show a large blank calendar for a month. Write in the names of the days of the week. Underline the word *day* in each name, Sunday, Monday, Tuesday, etc.

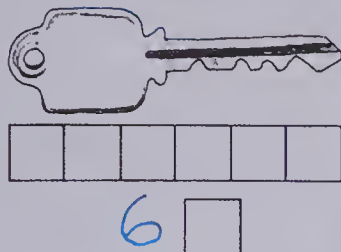
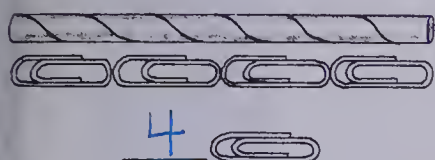
Match.



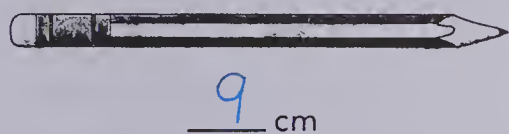
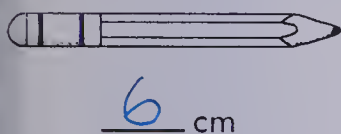
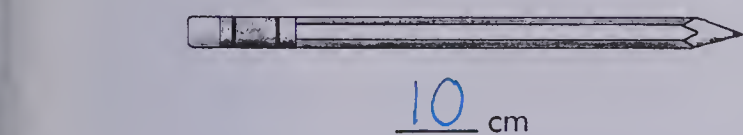
Put **C** on the corners of the yellow face.
Put **E** on the edges of the yellow face.



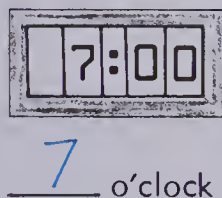
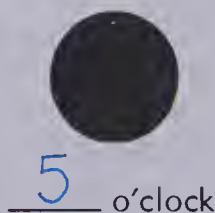
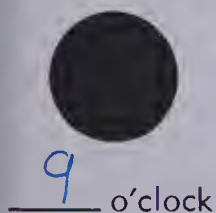
About how long?



Use your centimetre ruler.



What time is it?



160 one hundred sixty

Unit 8 Test

UNIT 8

TEST

Part 1: Recognize three-dimensional (can, ball, box, and cone) and two-dimensional (triangle, circle, square, rectangle) shapes.

Part 2: Recognize faces, edges, and corners.

Part 3: Measure length in nonstandard units.

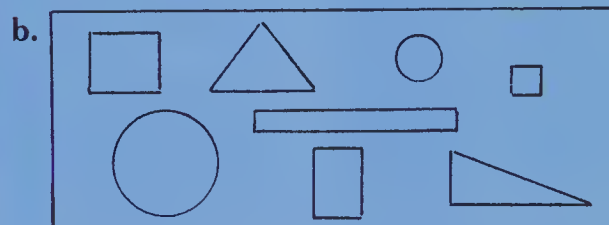
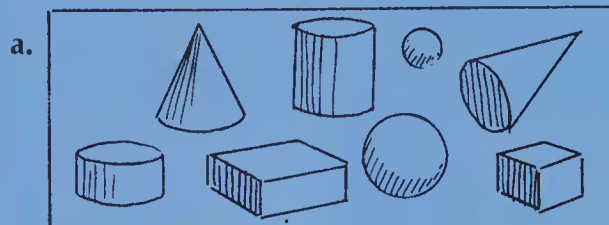
Part 4: Measure length using centimetre units.

Part 5: Tell time to the hour.

Informal Assessment

1. Geometry Skills

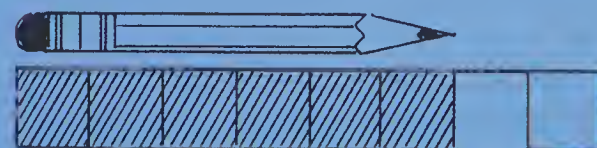
Using 2D and 3D models, ask students to sort them and describe their reasons for sorting. For example: these can roll; these can't.



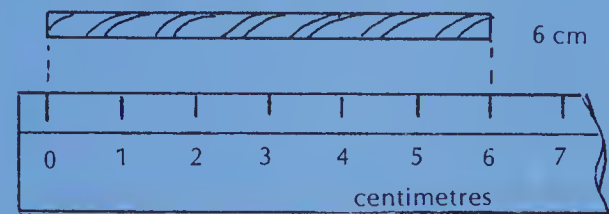
2. Measurement Skills

a. Have the student measure a pen, a straw, or a pencil with a paper clip. "How many paper clips long is it?" Does the student place the units end to end to match the length of the pencil and then count the units?

b. Ask the student to measure a pen, a straw, or a pencil with a centimetre paper strip. "How long is it?" Does the student align one end with the strip and then count units?



c. Have the student measure a pen, straw, and pencil with a centimetre ruler and record the measurement.



3. Telling Time Skills

Use a large display clock to check each student individually. Move the hands of the clock to show various times. "What time does this clock show?" "Can you make the clock show 11:00? 4:00? 7:00?"

Write 8:00, 1:00, and 12:00 on the chalkboard. Ask the student to make these times on the clock.

UNIT 9

Numerals to 100

Theme: Tens and Ones

Lesson		Objective	Pages
1	N27	Count sets and print numerals to 25.	161-162
2	N28	Count tens and print numerals to 90.	163-164
3	N29	Recognize and count dimes.	165-166
4	N30	Recognize tens and ones in numerals to 59.	167-168
5	N31	Compare and order numerals to 50.	169-170
6	N32	Recognize tens and ones in numerals to 79.	171-172
7	N33	Count on by ones and tens from sets of ten using dimes and pennies, tens and ones.	173-174
8	N34	Recognize tens and ones in numerals to 100.	175-176
9	N35	Count and compare numerals to 100.	177-178
10	N36	Order numerals to 100.	179
Test		Numerals to 100	180

Vocabulary

tens
count on
leftovers
groups of ten
coins
dimes
tens place
compare
less than
price
total
add one more

ones
in all
count by tens
money
pennies
cents
ones place
more than
greater
cost
100 chart

Printed Directions:

Find the bubble path to 50.
How many beans?
Connect the dots in order.

Materials

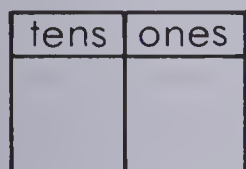
Numeral Cards **1** to **100**

Plastic ten-bags



Price Tag Cards **10¢**, **20¢**, **30¢**, ..., **90¢**

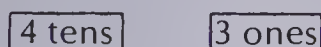
Tens and ones mats*



Place-value blocks: rods and cubes



Tens and ones cards



Number line to 100

interlocking cubes

plastic bags

wooden blocks

chart paper

beans

dice

macaroni

crayons

coin stamps

egg cartons

dimes and pennies*

paper plates

piggy bank

popsicle sticks

buttons

bingo chips*

graph paper

glue

*Available in Houghton Mifflin K-2 Activity Kit.

About This Unit

Unit 9 deals with numbers to 100: reading and writing the numerals, associating numerals with sets, comparing and ordering numbers, and working with place-value concepts related to tens and ones.

Up to this point in the program, students have been provided with opportunities for informal oral work with numbers to 100: counting objects, reading a number sequence, finding and copying two-digit numerals from a printed reference (such as a number line or page numbers in a book). Two-digit numerals should be familiar to the students from a variety of everyday activities, such as, where the

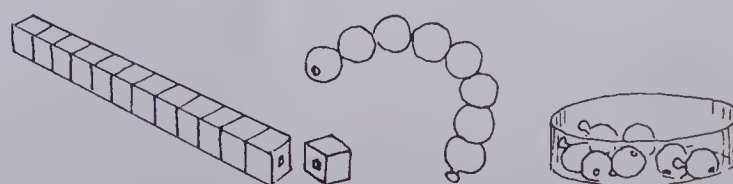
teacher has printed and read aloud numerals relating to dates, attendance, objects collected, etc.

The Activity Centre suggested in the introduction to Unit 6 included several ideas for counting and grouping sets well beyond 10 or 20. These informal activities, coupled with the lesson activities for Unit 7, should have established the ideas and vocabulary related to grouping sets of ten and counting these groups and the leftovers. On Unit 7 pupil pages, students had experience with finding, circling, or interpreting illustrated groups of ten; then recording the amount of tens and ones. These activities were linked with the already familiar, two-digit numerals from earlier work.

As in earlier units, the approach to place-value concepts used in Unit 9 relies heavily on previous exposure to numbers to 100 in counting activities and on informal experience with two-digit numerals. Another prerequisite to understanding place-value concepts involves the student's ability to work with groups in a "many-to-one correspondence". Studies of how children acquire number concepts indicate that they progress from counting by ones in a situation of one-to-one correspondence; to mentally representing quantity, as in counting on activities; through to working with groups or "chunks of numbers". Often students who seem insistent on counting each object in a set of ten without accepting the "tenness" of the group (despite having made the set of ten themselves) may not be ready for the abstractions involved in place-value work. These children will need more work with grouping materials and establishing vocabulary, in addition to extra guidance with the activities in the unit. Many educators feel that exposure to place value in the first year is desirable, but that mastery of tens and ones concepts should not be expected until the second year.

The importance of the use of materials for grouping and counting activities cannot be overstated. Objects for grouping and representing tens and ones can vary in abstraction.

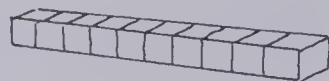
1. discrete objects that the student can join and unjoin



2. ready made sets requiring trading a ten for ten ones



bean sticks



base ten blocks
Dienes blocks

3. abstract representations (where length, size, and number of units cannot be used as clues to value)

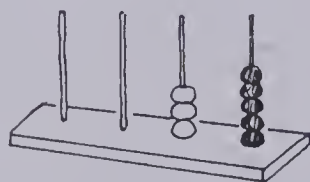


coins



coloured chips
for trading
(colour determines value)

abacus
(position and colour indicate value)

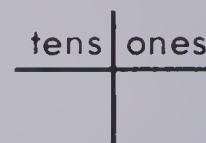


For introductory purposes, the first type of place-value representation is most effective because students can always see and count to check equivalence. Money, although categorized with the more abstract representations, is often familiar enough to the students that it is also a valuable physical aid.

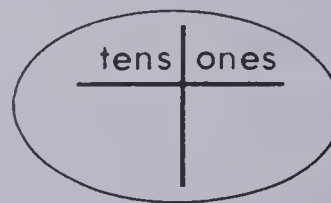
Through use of these aids, vocabulary is developed in a meaningful way. Referring to one ten as ten ones is confusing (sometimes even to adults), but the relationship can be made less abstract if a concrete ten or ten manipulable ones are available to be associated with the language. See that in addition to place-value materials reference charts are available, such as a number line to at least 100, a tens-ones chart to show the left-right distribution, and a hundred chart (as on page 178) to illustrate tens and ones patterns.

A common error of young children in dealing with two-digit numerals is to reverse the order of the digits in reading, but more often in writing, these numerals. To help students deal with the left-right distinctions inherent in place value, try some of the following suggestions.

1. Place a large place-value reference chart within easy view. (See that it is directly in front of those who need it, not behind or beside them.)



2. Tape a small place-value chart to the student's desk or work space.
3. For students who frequently reverse the order of the digits, see that when working with materials, the tens are always presented to the left of the ones to help build congruence between the visual image and kinesthetic experience of the number.
4. Provide a placemat with a tens and ones chart on it for students to use when counting and grouping materials.



5. Encourage the students to associate verbal place-value clues with oral number names, e.g., *Thirty-five ... that's three tens and five. Sixteen ... that's ten and six.* This is particularly important for the teen numbers.
6. Emphasize number patterns on the hundred chart or number line so that students can locate a number and copy it or check their efforts. "Find the number forty-seven. It is in the forties. Who can find it?"

Ideas

Provide materials and space for students to make their own place-value representations.

- Unifix trains, as on page 161
- baggies, twist ties, and beans or counters
- bean sticks, as on page 177

These materials can be used for the following grouping activities.

1. *Number Building*

Materials: tens and ones materials, tens and ones placemats, two-digit numeral cards.

Task: A student chooses a card, reads it, and models the number using tens and ones.

2. *Change My Set*

Materials: tens and ones materials, tens and ones placemats, two-digit numeral cards.

Task: The first student draws a card, then models that number with the materials. The second student draws a card, then adds or subtracts tens and ones to change the original set to the new number of counters. Set a time limit.

3. *Label my Set*

Materials: tens and ones materials, tens and ones placemats, Numeral Cards [0] to [9] (two sets).

Task: One student builds a set of tens and ones while the other labels the set and reads the number aloud. Switch and repeat.

tens	ones
3	2

4. *Roll and Group*

Materials: one die, Unifix cubes, tens and ones placemats.

Task: The object of the game is to get three (or four or five) tens on a placemat before any other player. Each student rolls a die and adds that number of cubes to the ones side of his or her placemat. As soon as a group of ten can be made, the player must connect the cubes to make a ten and move it over to the tens side. If the player fails to do this before the next player rolls the die, any other player may call the missed ten and add it to his or her own placemat.

5. *Roll and Pay*

Materials: dimes and pennies, one die, one paper plate, placemat for the banker to trade dimes for pennies.

Task: Students each start with three dimes and five pennies. One player rolls the die and must put that amount of pennies on the paper plate. If the player does not have enough pennies, he or she gives a dime to the banker, who trades the dime for ten pennies. Then the player puts the indicated amount of pennies on the paper plate. The last player to have money is the winner.

Bingo Grid

Hundreds Chart

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Tens and Ones Cards

0 ones	5 ones	0 tens	5 tens
1 one	6 ones	1 ten	6 tens
2 ones	7 ones	2 tens	7 tens
3 ones	8 ones	3 tens	8 tens
4 ones	9 ones	4 tens	9 tens

Name _____

Pretest**Unit 9**

Circle the tens. How many in all?



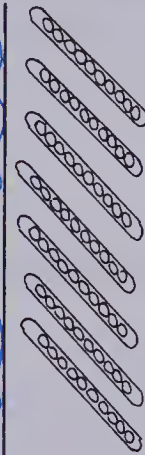
23

40

How many tens and ones?



tens	ones
5	3



tens	ones
7	4

How many in all?



46



95

Which is greater?

75

69

19

91

How much in all?



63

Count.

52 53 54 55 56 57 58 59

85 86 87 88 89 90 91 92

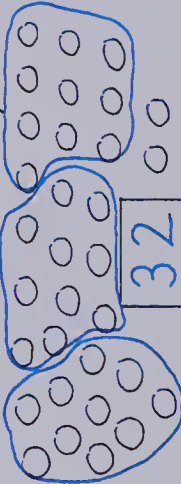
17 18 19 20 21 22 23 24

76 77 78 79 80 81 82 83

Name _____

Post-test**Unit 9**

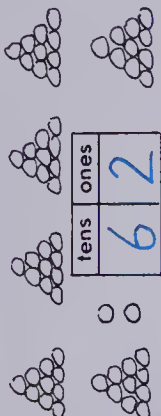
Circle the tens. How many in all?



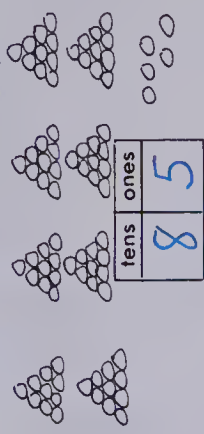
32

41

How many tens and ones?

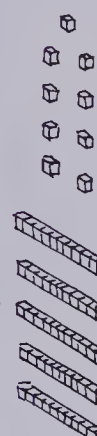


tens	ones
6	2

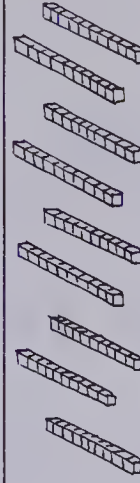


tens	ones
8	5

How many in all?



59



97

Which is greater?

23

32

51

49

How much in all?



73

Count.

61 62 63 64 65 66 67 68

14 15 16 17 18 19 20 21

36 37 38 39 40 41 42 43

85 86 87 88 89 90 91 92

Objective N27

Count sets and print numerals to 25.

Vocabulary

Tens, ones, count on, in all, leftovers

Materials

Blocks that join

Number line to 30

Egg cartons

Plastic bags and ties

Introducing the Lesson

Ask the students to make a long chain of at least 30 blocks that join. Have them count the blocks aloud by ones and record the number. Then ask them to recount the blocks and look for groups of ten, separating the chain after each ten.

Teaching the Lesson

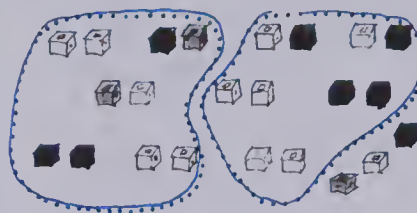
Have the class count aloud as one student points to each numeral on a number line to at least 30. Review the teens as one ten and leftover ones. Ask the students to come up and point to the numeral on the number line with these kinds of clues. "Find ten and five. Find two tens and five."

Ask the students to make groups of ten blocks and leftover ones for a given two-digit number. Discuss how many groups of ten and leftover ones there are for each. (If the students are not familiar with grouping, you are advised to refer to grouping activities on pages 101C and 101D and the information in About This Unit, page 101B, before teaching place value.)

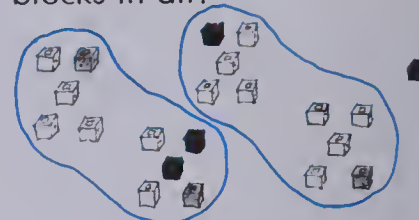
Show the students how to make a "ten maker" out of an egg carton. Discuss how many spaces there are in the carton and how many to take off so that there will be ten spaces left. Have them cut off the bottom two spaces so that the carton is open at one end. Ask a student to open the carton like a book and fill each space with a block as the others count aloud. When ten blocks are in the ten spaces, the student flips the blocks onto the lid and slides the ten into a bag.



Circle groups of 10. How many blocks in all?



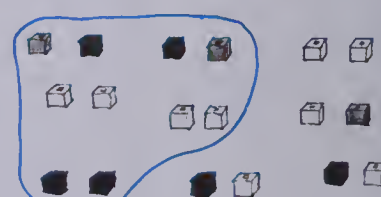
23 in all



21 in all

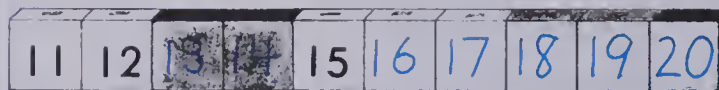


15 in all



18 in all

Count.



Numerals to 25

one hundred sixty-one 161

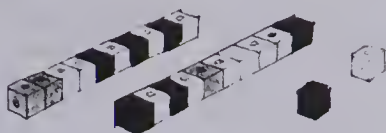
Using the Pages

- On page 161, the students find and circle groups of ten then record how many blocks in all. Discuss how identifying groups of ten can help speed up the recount. (*Ten, twenty, twenty-one, twenty-two.*) See that a number line is in clear view for students who need to find and copy two-digit numerals.
- Before the students do page 162, show several examples at the chalkboard to explain how to complete the exercise. You may want to do this page as a guided lesson to ensure that students are familiar with the vocabulary and format.

How many tens? How many ones? How many in all?



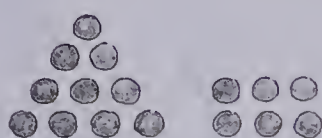
2 tens 3 ones
23 in all



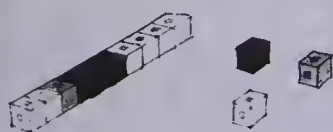
2 tens 2 ones
22 in all



2 tens 1 ones
21 in all



1 tens 6 ones
16 in all



1 tens 3 ones
13 in all



1 tens 8 ones
18 in all



2 tens 5 ones
25 in all



1 tens 1 ones
11 in all

162 one hundred sixty-two

Numerals to 25

Reinforcement

1. Give the students counters and plastic bags and have them make sets of ten for each bag.
2. Ask the students to find the number of blocks there are in the following arrangement. Have them count by ones first, then count by tens and count on the remaining ones.

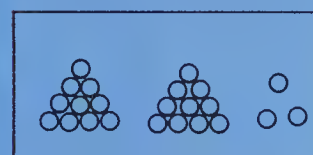


Repeat with various amounts of blocks, emphasizing the vocabulary of tens and ones, and the two ways of counting (by ones, and by tens and ones).

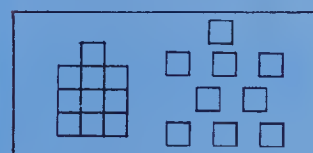
3. Provide a long strip of paper for students to copy, or print from memory, the numerals to 25.

4. Print 4 tens 2 ones on the board. Read it with the students. Ask a student to show that number of tens and ones with blocks. Practise the sight vocabulary. *Four tens and two ones is forty-two in all.*

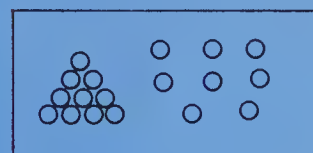
5. Make the following cards for the students to match.



1 ten 9 ones
19 in all



2 tens 3 ones
23 in all



2 tens 4 ones
24 in all



1 ten 8 ones
18 in all



2 tens 5 ones
25 in all

Enrichment

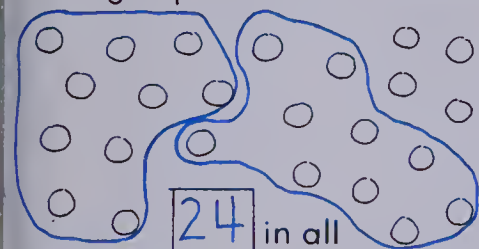
Give students Numeral Cards to 25 to mix and then put in order.

Extra Practice

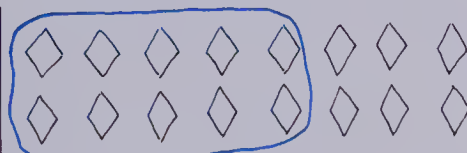
Worksheet N27

Pages 161-162

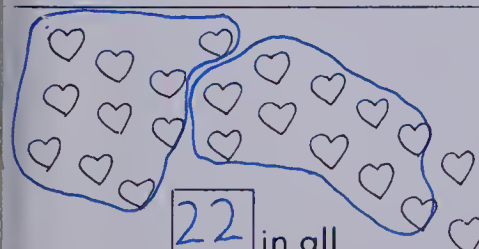
Circle groups of 10. How many in all?



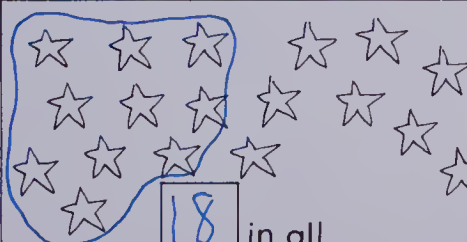
24 in all



16 in all



22 in all



18 in all

UNIT 9 LESSON 2

Objective N28

Count tens and print numerals to 90.

Vocabulary

Tens, count by tens, groups of ten

Materials

Numeral Cards, **10**, **20**, **30**, ..., **90**
Plastic "ten-bags"

Introducing the Lesson

Review how to make tally marks. Have the students count aloud by ones as you make tally marks in a long row across the chalkboard. Then, starting at the beginning, recount and loop sets of ten as you count. Ask a student to show you, on a number line, the number for each set of ten. Print 10, 20, 30, ... along the row of tally marks. Count orally by ones and by tens to various points along the row of tally marks.

Teaching the Lesson

Show the Numeral Cards from 10 to 90 in mixed order as the students read each aloud. Set the cards in the chalk ledge and ask them to arrange the cards in order.

Ask a student to show you a certain quantity using "ten-bags" (plastic bags each filled with ten counters). Say both forms, for example, "2 tens" and "twenty", to associate the two names for 20. Print 40 or 4 tens on the chalkboard. Ask a student to show that amount with the plastic bags. Repeat. Print 3 tens. Ask a student to print the numeral for 3 tens. Repeat.

Count by tens.



10 **20** **30** **40** **50** **60** **70** **80** **90**

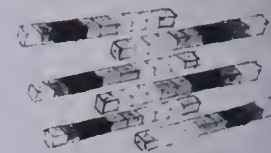
How many tens? How many in all?



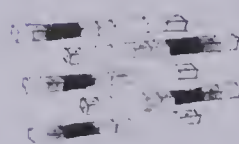
3 tens
30 in all



2 tens
20 in all



6 tens
60 in all



5 tens
50 in all



4 tens
40 in all



8 tens
80 in all



3 tens
30 in all



7 tens
70 in all



1 tens
10 in all

Tens

one hundred sixty-three 163

Using the Pages

- Do several examples on page 163 with the students. Count orally by tens using the sequence at the top of the page. The students may need to use this reference to print the numerals on the page.
- Page 164 requires the students to match two names to each illustrated set of tens.

Match.

6 tens

3 tens

2 tens

1 ten

7 tens

9 tens

5 tens

4 tens

8 tens

164 one hundred sixty-four

Tens

Reinforcement

1. Students trace both hands, cut them out, and paste them all in a long row. (Use a long sheet of shelf paper.) Label sets of ten fingers.



2. Place sets of from 20 to 90 objects in paper bags. Students make their own set of tally marks for the set of objects in a bag. As each item is removed from the bag, a tally mark is made. Then sets of ten are looped, the tally marks are counted, and the number in all is recorded.



Enrichment

Show the students how to use block trains to measure. For example, "How many blocks wide is the doorway?" Separate the trains into tens and left-overs, or ones, and then record 2 tens 4 ones, 24.

Extra Practice

Worksheet N28

Pages 163-164

How many tens?

How many in all?

<p><u>3</u> tens 30 in all</p>	<p><u>5</u> tens 50 in all</p>	<p><u>7</u> tens 70 in all</p>
<p><u>6</u> tens 60 in all</p>	<p><u>9</u> tens 90 in all</p>	<p><u>4</u> tens 40 in all</p>

Objective N29

Recognize and count dimes.

Vocabulary

Money, coins, pennies, dimes, cents

Materials

Dimes and pennies*

Price Tag Cards 10¢, 20¢, 30¢, ..., 90¢

Introducing the Lesson

Discuss dimes and pennies with the students. Emphasize their differences in size, colour, design (both sides), and value. Count out a set of ten pennies. Point out that a dime has the same value. Record 10¢ on the chalkboard.






Choose a student to act as banker. Give that student the dimes. Have the students take turns counting out a pile of ten pennies and exchanging it for a dime. Ask, "How much was the pile of pennies worth? How much is the dime worth?"

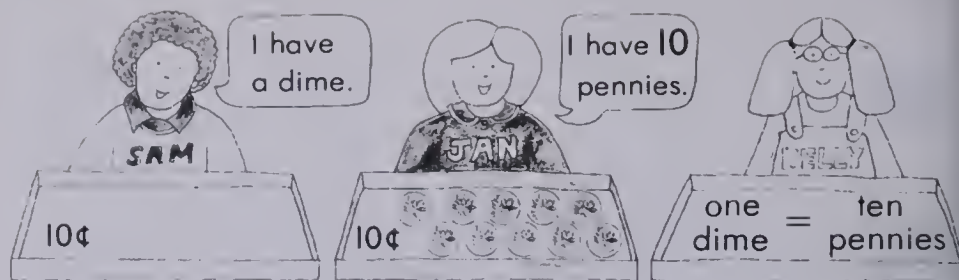
Teaching the Lesson

Ask the students to count and record the value of sets of dimes. Show them how to make a cents sign.

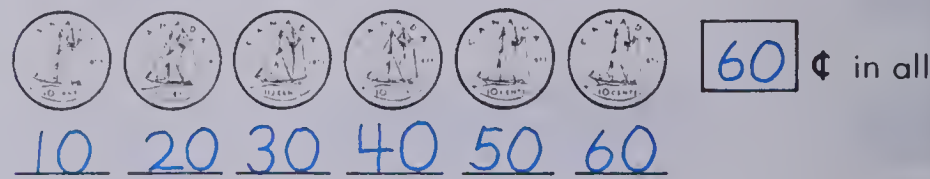
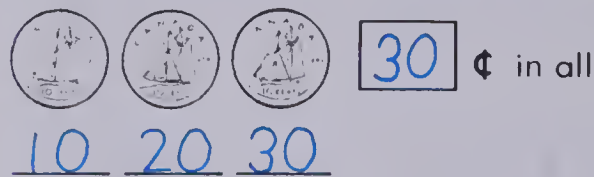
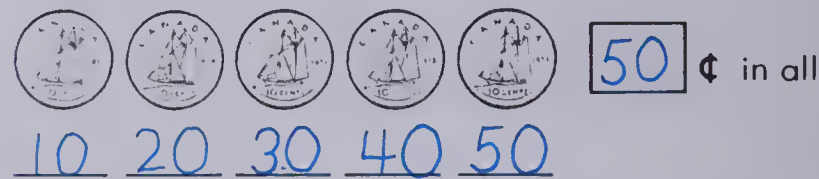
Play a "Guess How Much" game. Pass a bag or box of dimes. Each student takes a turn putting some dimes in his or her hand. The others take turns guessing how much is hidden. The student hiding the money can give clues, such as "more" or "less".

Show a price tag card, 30¢, 50¢, etc. Ask the students, in turn, to count out the amount shown in dimes. As the students are counting out sets of dimes, record their counting by tens. Show how the highest count is the value of the set of dimes.

    
ten, twenty, thirty, forty, fifty.
"Fifty cents in all."



Count the dimes.
How much in all?



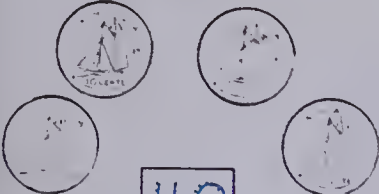
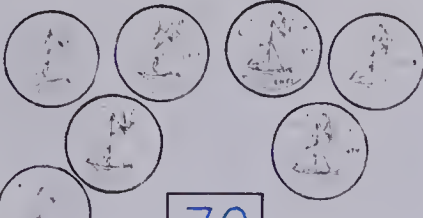
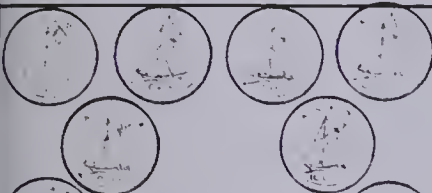

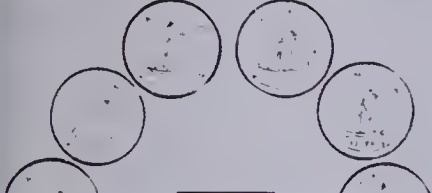
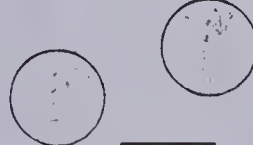

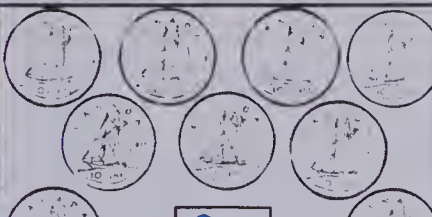
Dimes

one hundred sixty-five 165

Using the Pages

- Depending on how familiar your students are with money, you will have to adjust the pace or scope of these activities. Some six-year-olds have a great deal of difficulty seeing a dime and 10 pennies as an equal value, while others can exchange dimes and pennies with ease.
- Discuss the illustration on page 165 relating it to the lesson activities. Do an example with the students.
- On page 166, count out an example with the students.

How much in all?

 40 ¢	 70 ¢
 80 ¢	 50 ¢
 60 ¢	 20 ¢
 30 ¢	 90 ¢

Count by tens.

10 20 30 40 50 60 70 80 90

166 one hundred sixty-six



Dimes

Reinforcement

1. Play a dime and penny trading game similar to the Introducing the Lesson activity. Roll a die and take that number of pennies. When you have ten pennies, they must be traded for a dime. The first person to get three dimes is the winner.

2. Provide the price tag cards **10¢** to **90¢** for the students to order. The cards can be placed on plates and sets of dimes can be added to match the price.

Enrichment

Show the students how to draw dimes and pennies:  and . Ask them to draw the coins that equal 30¢, 70¢, 24¢, 61¢, 50¢, and 33¢.







$$30¢ = \textcircled{10¢} \textcircled{10¢} \textcircled{10¢}$$

Extra Practice

Worksheet N29

Pages 165-166

How much in all?

 40 ¢ in all	 70 ¢ in all	 90 ¢ in all
 50 ¢ in all	 80 ¢ in all	 60 ¢ in all

Objective N30

Recognize tens and ones in numerals to 59.

Vocabulary

Tens, ones, tens place, ones place

Materials

Tens and ones mats*

Interlocking cubes

Numeral Cards 0 to 9

Introducing the Lesson

Introduce the tens and ones mats. Show with a set of cubes how sets of up to ten belong on the ones side. Count out sets of cubes with the students by placing cubes one at a time on the ones side. When ten cubes accumulate on the ones side, have the students clap. Then join the cubes and the group of ten is placed on the tens side. Continue making sets representing several numbers to 50. Emphasize the different ways of describing a set.

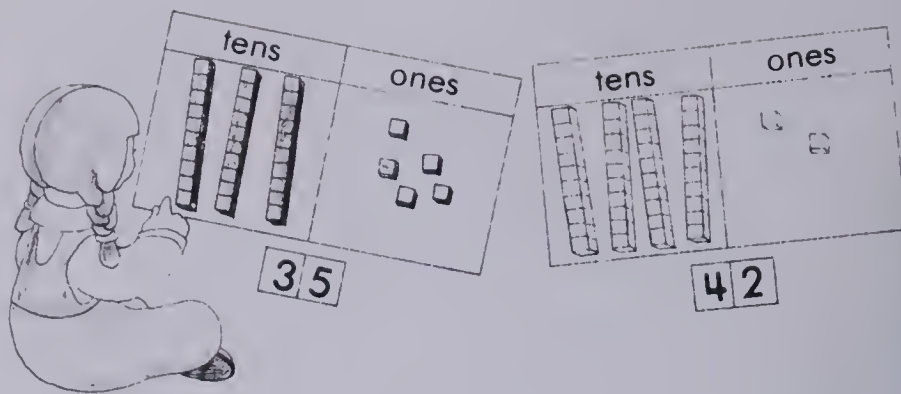
1. 3 tens and five
2. thirty and five
3. thirty-five

**Teaching the Lesson**

Ask a student to show 24 on the tens and ones mat. Ask, "How many tens? How many ones? How many in all?" Have the students count the set to check. *Ten, twenty, twenty-one, twenty-two, twenty-three, twenty-four.* Repeat with other examples. Be sure to include making sets of from 11 to 19 cubes on the mats, emphasizing, e.g., the "ten and four is fourteen" description. (This activity should help avoid confusing, e.g., 14 and 41.)

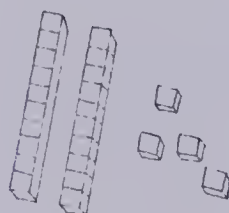
Show the students how to label the tens and ones rods and cubes on the mats with Numeral Cards. Slide the two Numeral Cards together to get the numeral representing the number of rods and cubes in all. Repeat.

Print a numeral on the chalkboard and ask a student to show that number of tens and ones with rods and cubes. Repeat.



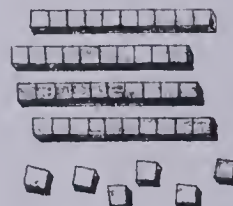
How many tens and ones?

How many in all?



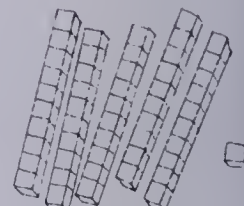
tens	ones
2	4

24



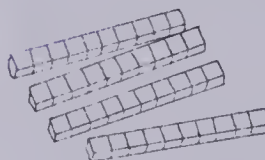
tens	ones
4	6

46



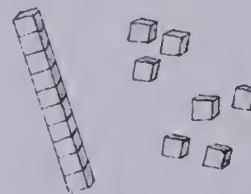
tens	ones
5	1

51



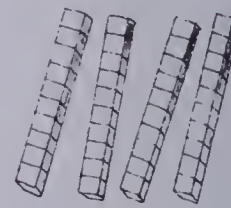
tens	ones
4	3

43



tens	ones
1	7

17



tens	ones
4	0

40

Numerals to 59

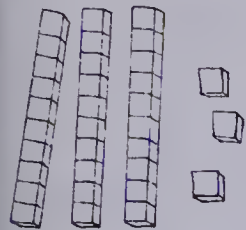
one hundred sixty-seven 167

Using the Pages

- Discuss the illustration on page 167. Ask, "How many tens? How many ones? How many in all?" Have the students count: *Ten, twenty, thirty, thirty-one, thirty-two, thirty-three, thirty-four, thirty-five.* Do several examples with them.
- On page 168, count orally from 20 to 59 with the students to show how to complete the counting chart at the bottom of the page.

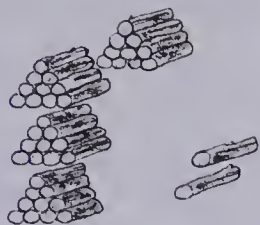
How many tens and ones?

How many in all?



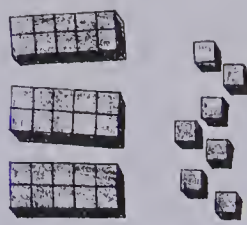
tens	ones
3	3

33



tens	ones
4	2

42



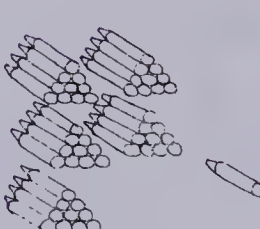
tens	ones
3	7

37



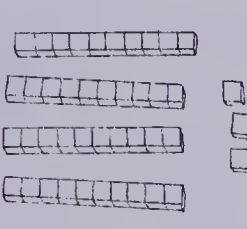
tens	ones
5	5

55



tens	ones
5	1

51



tens	ones
4	3

43

Count by ones.

20	21	22	23	24	25	26	27	28	29
30	31	32	33	34	35	36	37	38	39
40	41	42	43	44	45	46	47	48	49
50	51	52	53	54	55	56	57	58	59

Reinforcement

1. Show a set of rods and cubes. Print a tens and ones chart on the chalkboard. Ask a student to fill in how many tens and ones there are in the set and then print the numeral representing how many there are in all underneath. Repeat with several examples.

2. Provide a tens and ones mat, cubes, and Numeral Cards for pairs of students. One student says a number, while the other builds it on the mat and labels it. They take turns.

3. Provide a worksheet of counting examples such as 34 . The students can use a book to look up 34, then record what comes before and after 34.

Enrichment

Show sets of rods and cubes. Ask, "How many tens and ones? How many in all?" Show the students how to

record, e.g.,  3 tens and 2 ones,

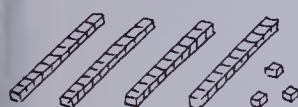
as $30 + 2 = 32$. Print $40 + \underline{\quad} = 47$
 $\underline{\quad} + 5 = 25$, and $\underline{\quad} + \underline{\quad} = 53$. Have students make up other examples.

Extra Practice

Worksheet N30

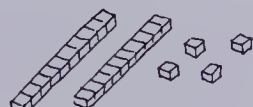
Pages 167-168

How many tens and ones? How many in all?



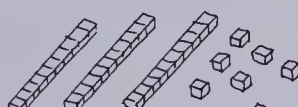
tens	ones
4	3

43



tens	ones
2	4

24



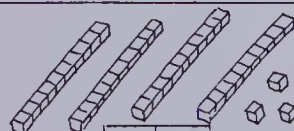
tens	ones
3	7

37



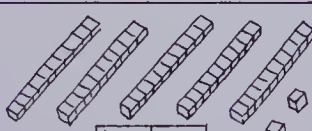
tens	ones
1	9

19



tens	ones
4	5

45



tens	ones
5	8

58

Objective N31

Compare and order numerals to 50.

Vocabulary

Compare, more than, less than, greater

Direction words: Find the bubble path to 50.

Materials

Number line

Blocks, in bags of ten and loose

Numerals Cards to 50



Introducing the Lesson

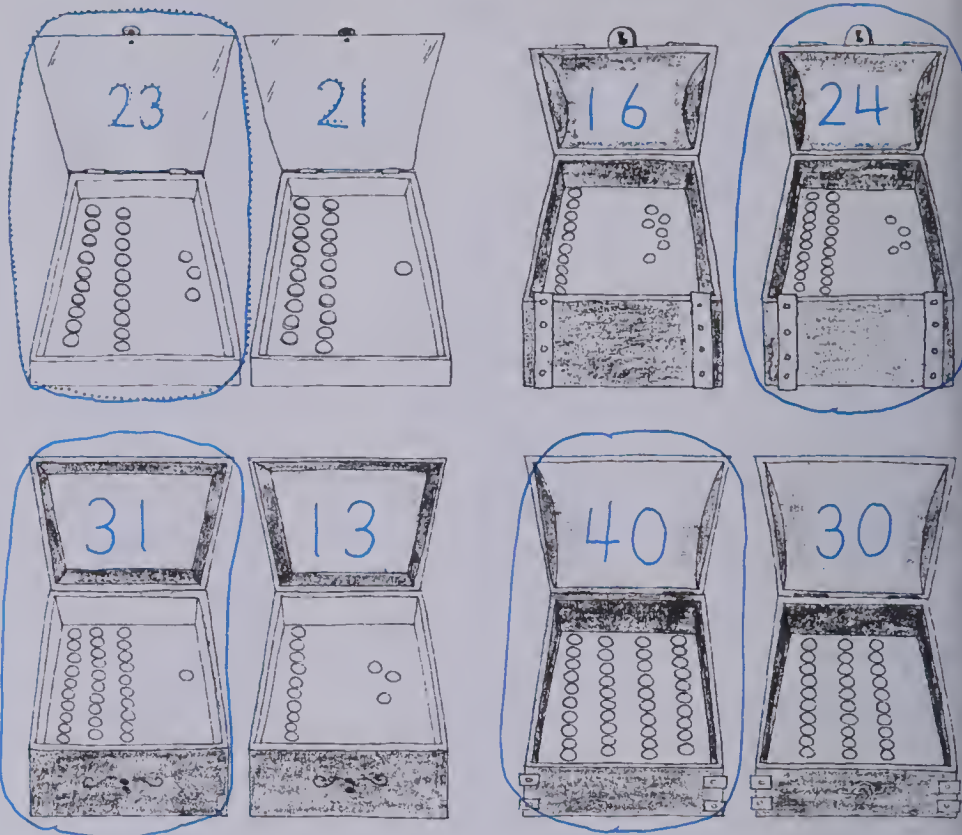
Ask the students to read and count the numbers to 50. Let them use a number line as a reference. Call two numbers. Ask, "Which is greater?" Show the students how the number line can be used for comparisons.

Teaching the Lesson

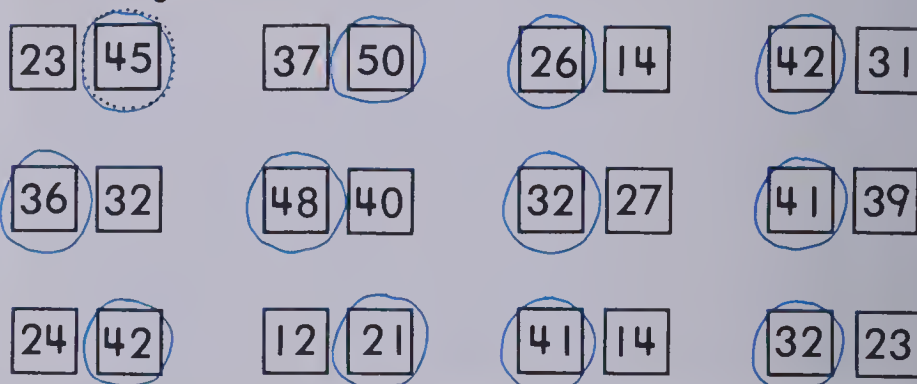
Ask the students to show the numbers 34 and 42 using blocks and bags of ten. Ask, "Who has more? How do you know 42 is greater than 34?" *Four tens is greater than three tens.* Use a place-value chart on the chalkboard to show the tens and ones comparison. Repeat.

Put out two piles of ungrouped blocks. Ask which pile is greater. Have students count, group tens and ones, record how many, then compare and show which is more.

How many ○ in each ? Which  has more?



Which is greater?



Compare numerals to 50

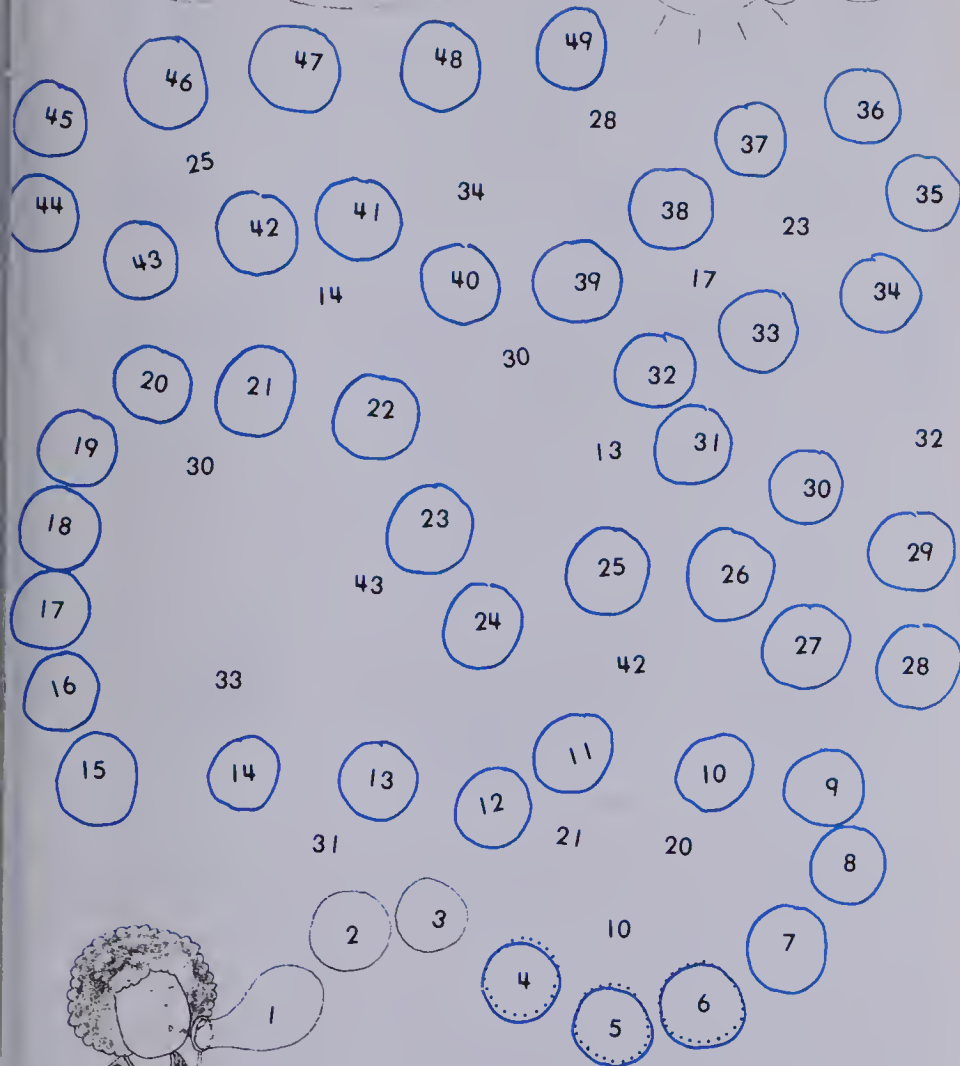
one hundred sixty-nine 169

Using the Pages

- For each example on page 169, the students are to count how many in each chest, record the numeral, and circle the chest with more coins. Do a few examples together at the bottom of the page. Discuss why the numbers circled are greater.
- On page 170, the students are to circle each numeral in sequence from 1 to 50 to make a path of bubbles.

Find the bubble path to 50.

50



170 one hundred seventy

Order numerals to 50

Reinforcement

1. Play a comparison game using the Numeral Cards to 50. Arrange the players in a row. The first two players draw a Numeral Card, compare, and say, e.g., "Forty-five is greater than twenty-three". The player with the greater number stays up, while the other sits down, and the next player comes up. Again, both players draw cards, compare, and the player with the greater number stays up. Continue.

2. Record a list of numerals to 50 on the chalkboard. Ask the students to print a numeral and the one that comes next. The chalkboard list can be used for reference. 36 37

3. Give the students paper and pencils. Call two numbers. Have the students record both numbers and circle the greater one. Check their responses by writing the two numbers on the chalkboard to ensure tens and ones are not reversed. Repeat.

Enrichment

Give each student the Numeral Cards 0 to 9. Ask the students to place their set of Numeral Cards face down, mix them, turn over two cards, and try to make a number that is, e.g.,

- higher than 33,
- lower than 42, or
- closest to 25.

Extra Practice

Worksheet N31

Pages 169-170

Which is greater?

43	51	28	14	16	21	37	29
19	11	42	33	27	15	36	43
23	30	59	48	51	38	20	50
56	48	25	35	12	21	52	25

Objective N32

Recognize tens and ones in numerals to 79.

Vocabulary

Tens, ones, tens place, ones place

Materials

Place-value blocks: rods and cubes

Ten-bags and loose blocks

Dimes and pennies*

Paper plates

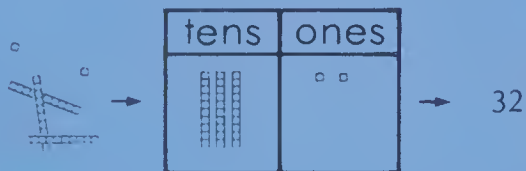
Tens and ones mats*

Tens and ones cards: 6 tens, 2 ones

Numeral Cards to 9

Introducing the Lesson

Place stacks of rods and cubes, dimes and pennies, and/or ten-bags and loose blocks on paper plates. Choose a student to come up, sort out the tens and ones, and record how many in all. Use a tens and ones mat for sorting. See that each set is counted before doing the next example.



Ten, twenty, thirty, thirty-one, thirty-two.

Teaching the Lesson

Use ten-bags and loose blocks to practise counting on by tens and ones with various sized sets to 79.



Ten, twenty, thirty, forty, fifty, sixty, sixty-one, sixty-two.

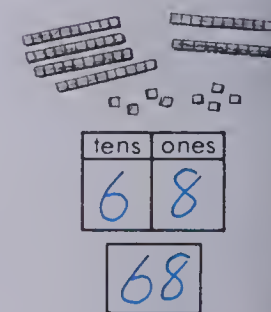
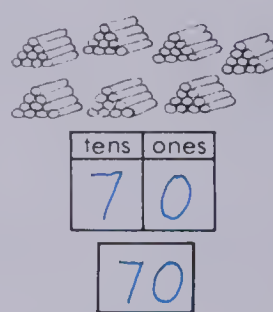
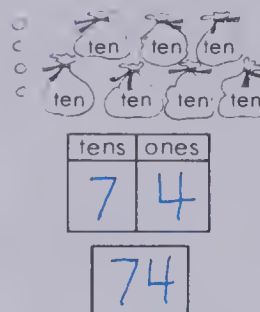
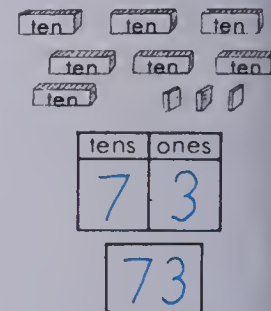
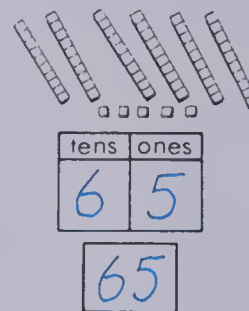
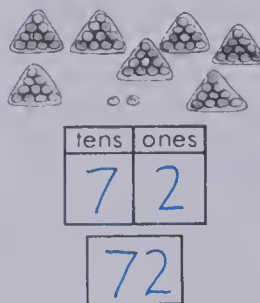
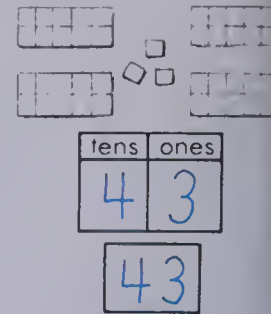
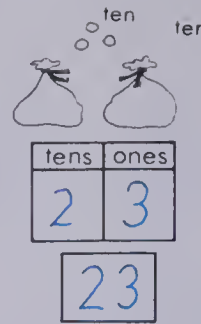
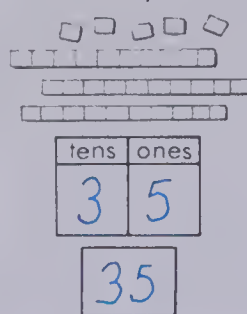
Display a ten card and a one card. Ask a student to make a model of that number with the ten-bags and loose blocks. Emphasize the difference, e.g., between 4 ones and 4 tens.

Mix the order of the tens and ones cards. See if the students can order and read them correctly, then record the numeral to match.

6 ones 5 tens → 5 tens 6 ones → 56

How many tens and ones?

How many in all?



Count by ones.

60	61	62	63	64	65	66	67	68	69
70	71	72	73	74	75	76	77	78	79

Numerals to 79

one hundred seventy-one 171

Using the Pages

- Do a few of the examples on page 171 with the students. Emphasize that they are to count by tens and then to count on by ones.
- Some students may require help with the tens and ones ordering exercise on page 172. Ensure that a place-value reference chart is in full view to help with left-right placement.

Write the numeral.

tens

ones

3

6

3 tens

6 ones

36

tens

ones

6

3

6 tens

3 ones

63

6 tens

4 ones

64

7 ones

6 tens

67

3 ones

5 tens

53

4 tens

0 ones

40

2 ones

6 tens

62

4 ones

7 tens

74

Count.

26	27	28	29	30	31	32	33	34
53	54	55	56	57	58	59	60	61
38	39	40	41	42	43	44	45	46
66	67	68	69	70	71	72	73	74

172 one hundred seventy-two

Order numerals to 79

Extra Practice

Worksheet N32

Pages 171-172

Write the numeral.

<div>3 tens</div> <div>8 ones</div> <div>38</div>	<div>5 ones</div> <div>4 tens</div> <div>45</div>	<div>7 tens</div> <div>3 ones</div> <div>73</div>
<div>4 tens</div> <div>7 ones</div> <div>47</div>	<div>5 ones</div> <div>2 tens</div> <div>25</div>	<div>6 tens</div> <div>9 ones</div> <div>69</div>
<div>7 ones</div> <div>6 tens</div> <div>67</div>	<div>6 tens</div> <div>0 ones</div> <div>60</div>	<div>4 ones</div> <div>7 tens</div> <div>74</div>

Reinforcement

1. Provide magazines and newspapers for the students to find and cut out two-digit numerals. These can be pasted in rows according to how many tens are in each numeral.
2. Provide ten paper plates marked A to J. Give the students recording papers listing A to J. Place a tens and a ones card on each plate. Have the students look at both cards and record the numeral on their papers beside the appropriate letter.
3. Give the students turns choosing 2 one-digit Numeral Cards, showing which two numerals can be made with those digits, recording the two numerals, and choosing the greater one.

4

6

46

6

4

64

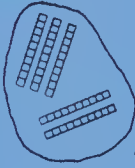
Enrichment

Mix the tens and ones cards. Show students how to select 2 or 3 cards, build matching sets with rods and cubes, and write the number in all.

3 tens

2 tens

4 ones



→ 54

Objective N33

Count on by ones and tens from sets of ten using dimes and pennies, tens and ones.

Vocabulary

Coins, price, cost, total, count on, money

Materials

Dimes and pennies*

Paper plate

Small objects: beans, buttons, macaroni

Plastic bags

Introducing the Lesson

Write the following menu on the chalkboard.

crackers	2¢	cookies	3¢
apples	15¢	juice	12¢

Give each student an opportunity to choose an item or items from the menu, then show which coins (dimes and pennies) will be needed to pay for these items. Have the whole group orally count out the set of coins, starting with the dimes and counting on with the pennies. For students who choose to pay using only pennies, accept their method and then ask if there is another way to pay that amount.

juice



One, two, three, ... twelve cents.

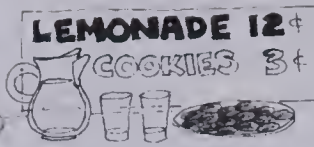


Ten, eleven, twelve cents.

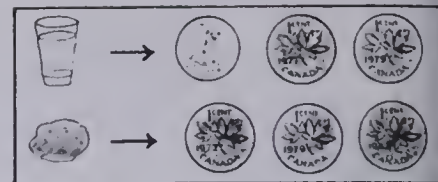
Teaching the Lesson

Each student puts an amount of coins on a plate, passes it, and the next student tries to count out the amount of coins correctly. Encourage them to use both dimes and pennies to count the dimes by tens, and then to count on the pennies by ones. Each student gets to count a neighbour's plateful, then puts a different amount on the plate and passes it on.

Have the students bag sets of ten using various types of objects, then count up the total.



How much money?



		10 11 12	12¢
		10 11 12 13 14 15	15¢
		10 20 21 22 23 24	24¢
			18¢
			27¢

Dimes and pennies

one hundred seventy-three 173

Using the Pages

- Before assigning page 173, try to assess each student's ability to count by tens and count on by ones by showing a set of 53¢ in coins (or 5 tens and 3 ones) and asking a student to count it out for you. Those students who have difficulty switching from counting by tens to counting on by ones, or who insist on counting only by ones, will need extra help with pages 173 and 174.
- Do a chalkboard example with the students to illustrate how to record the counting by tens and counting on by ones on page 174.

Count.

10 20 30 40 50 60 61 62 63 63

10 20 30 40 50 51 52 53 54 54

10 20 30 40 41 42 43 44 45 45

10 20 30 40 50 60 70 71 71

10 20 30 40 50 51 52 52

52¢

34¢

174 one hundred seventy-four Counting on

Reinforcement

1. Provide cards with a price on one side and a drawing of dimes and pennies to match the price on the other side. Ask the students to read the price, build the set of coins to match, and turn over the card to check.

36¢

2. Ask the students to make the above cards. Provide the prices. They can either draw or stamp the amount of coins needed on the reverse side. Use only dimes and pennies.

Enrichment

Use a rate table format to show the cost of increasing amounts of various items.

number	cost	coins needed
1	4¢	1¢ 1¢ 1¢ 1¢
2	8¢	1¢ 1¢ 1¢ 1¢ 1¢ 1¢ 1¢ 1¢
3	12¢	10 1¢ 1¢
4		
5		
6		

Extra Practice

Worksheet N33
Pages 173-174

10 20 30 40 41 42 43 44 45 46 46

10 20 30 40 50 60 61 62 63 64 65 65

10 20 30 40 50 60 70 71 72 72

10¢ 20¢ 30¢ 40¢ 50¢ 51¢ 52¢ 53¢ 54¢ 54¢

Objective N34

Recognize tens and ones in numerals to 100.

Vocabulary

100 chart, add one more

Materials

Chart paper

Numeral Cards **1** to **100**

Ten paper plates

Piggy bank

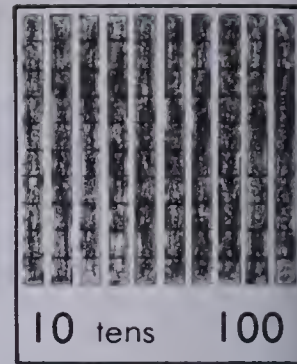
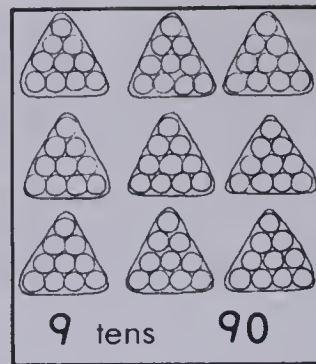
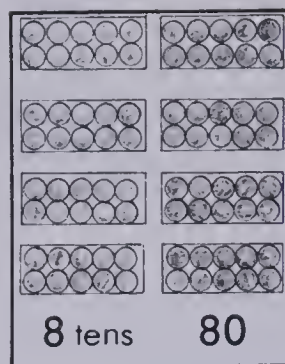
Introducing the Lesson

Prepare a large 10 × 10 grid for making a 100 chart. Have the students answer various counting questions as you fill in the numbers on the chart. Ask them to count slowly by ones as you fill in the numbers from 1 to 20. Then point out 10 and 20. Ask, "What pattern goes down the right side of the chart?" Have the students count slowly by tens as you fill in 30 to 100. Complete the numbers from 21 to 29. Ask the students to look for other patterns as the numbers are filled in, e.g., 5, 15, 25, 35 ...; or 1, 11, 21, 31 ... See if the students can predict what goes in a particular square. Continue counting by ones and filling in all 100 squares. Display the chart for handy reference.

Teaching the Lesson

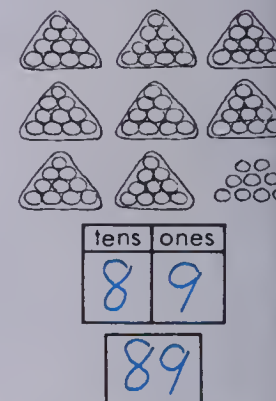
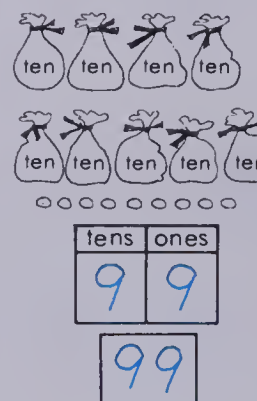
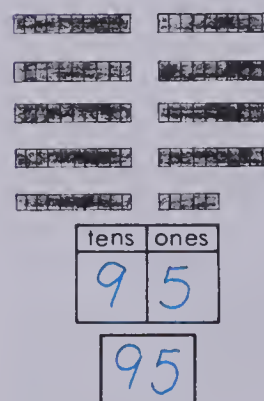
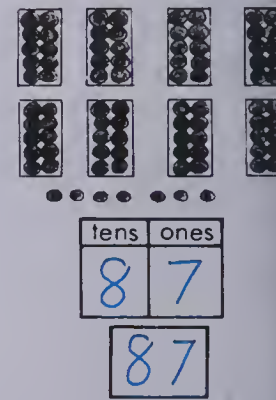
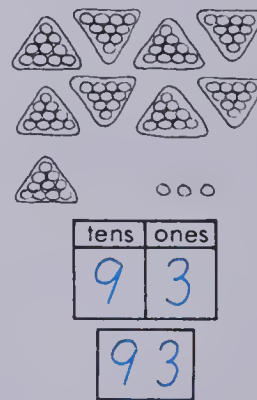
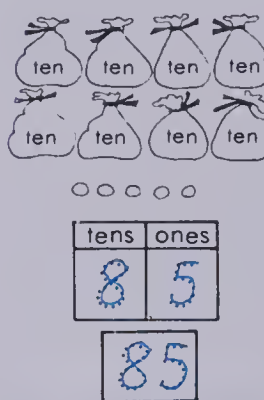
Prepare ten paper plates labelled with the multiples of 10 to 100. Give out the Numeral Cards from 1 to 100 so that each student has several. Ask for any number, e.g., in the fifties. Students with the Numeral Cards from 50 to 59 read their cards aloud and put them on the fifties plate. Continue with the thirties, the nineties, and so on. Once all ten plates have ten cards, ask the students to arrange the cards on the plates in order. The ordered Numeral Cards can be displayed along a chalkboard ledge or shelf.

Play an imaginary counting game using a piggy bank. "There are 75 pennies in here. Now how many?" (Pretend to add pennies.) Use numbers to 100.



How many tens and ones?

How many in all?



Numerals to 100

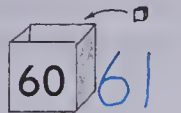
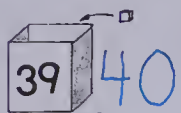
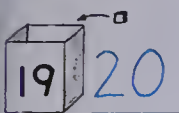
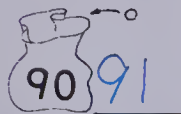
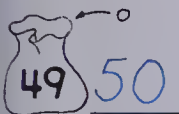
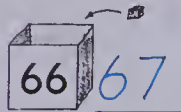
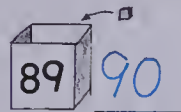
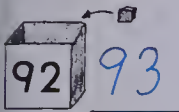
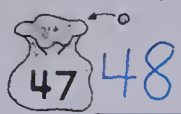
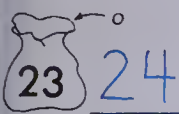
one hundred seventy-five 175

Using the Pages

- On page 175, count the tens for the three illustrations at the top of the page. Do an example of naming the amount of tens, ones, and how many in all with the students.
- On page 176, ask, "How many will be in each box (or bag) if we add one more?" Do the top three examples with the students. Review making a cents sign for the bottom exercise.



Add one more. How many?



Count the pennies.



176 one hundred seventy-six

Count to 100

Reinforcement

1. Have the students count a set of objects such as crayons. Ask them to make sets of ten and count the tens and leftovers. The counting by tens and counting on by ones can then be recorded, e.g., 10, 20, 30, 40, 41, 42.

2. Provide dried kidney or lima beans, popsicle sticks, and white glue for making ten-sticks for the next lesson. Show the students how to arrange ten beans, glue each on separately, then put a line of glue over the top to secure the beans. Have the students practise counting by tens with the ten-sticks.

3. Provide paper for the students to try to record the numerals from 50 to 100 from memory. Let them use the 100 chart to check.

Enrichment

Provide a worksheet or chalkboard exercise involving adding a one-digit number to a two-digit number.

$56 + 1 = \square$

$36 + 1 = \square$

$48 + 1 = \square$

$42 + 1 = \square$

$74 + 1 = \square$

$70 + 1 = \square$

$63 + 1 = \square$

$39 + 1 = \square$

$29 + 1 = \square$

$21 + 1 = \square$

$59 + 1 = \square$

$12 + 1 = \square$

$89 + 1 = \square$

$67 + 1 = \square$

$45 + 1 = \square$

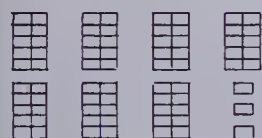
$99 + 1 = \square$

Extra Practice

How many tens and ones? How many in all?

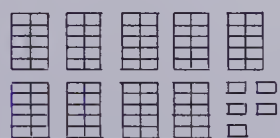
Worksheet N34

Pages 175-176



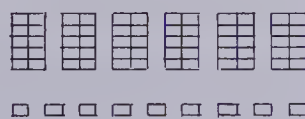
tens	ones
7	3

73



tens	ones
9	5

95



tens	ones
6	9

69



tens	ones
8	6

86



tens	ones
9	1

91



tens	ones
7	8

78

UNIT 9 LESSON 9

Objective N35

Count and compare numerals to 100.

Vocabulary

Compare, greater, tens place, ones place

Direction words: How many beans?

Materials

Ten-sticks

Beans

Numeral Cards to 100

Number line to 100

100 chart

Introducing the Lesson

Have the students prepare ten-sticks out of beans and popsicle sticks as described in the second Reinforcement activity on page 176. Choose a student to come to the chalkboard and record a two-digit numeral, read it aloud, and then count a set of ten-sticks and beans to match the numeral.

34



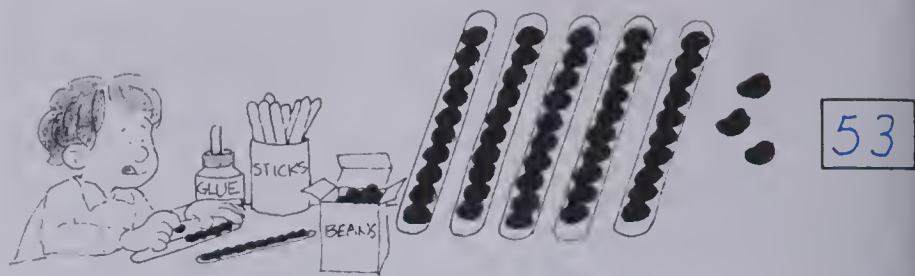
Ten, twenty, thirty, thirty-one, thirty-two, thirty-three, thirty-four.

Give others a chance to print a numeral and build a set. Reverse the process so that one student builds a set and the others count it and record the numeral.

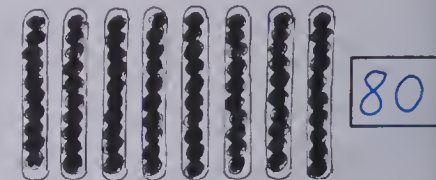
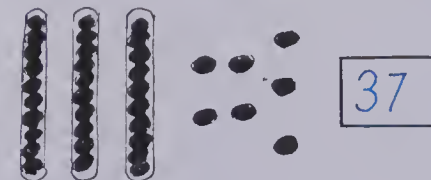
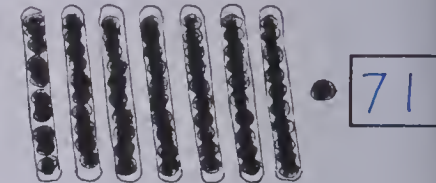
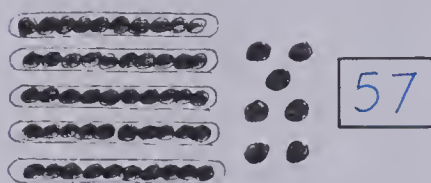
Teaching the Lesson

Show the Numeral Cards to 100. Have two students each choose a card and build that number with the ten-sticks and beans. The students can then compare the two numbers and explain why one is greater than the other. *Fifty-three has five tens and forty-seven has only four.*

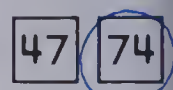
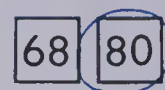
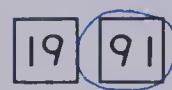
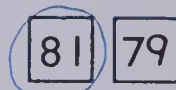
Record 53 and 35 on the chalkboard. Ask the students to read both numerals. Ask, "Which one is greater?" Emphasize the amount of tens and ones. Point out their relative locations on a number line.



How many beans?



Which is greater?



Count and compare numerals to 100

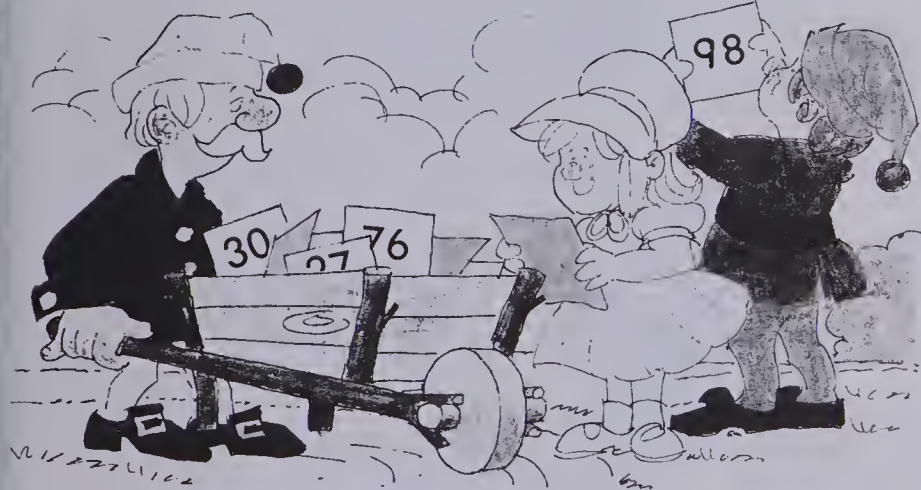
one hundred seventy-seven 177

Using the Pages

- Do a chalkboard example for the counting and comparing exercises on page 177.
- Get the students started on the hundred chart on page 178 by counting and recording several spaces or rows together. For slow workers you may want to put a limit on your expectations (say, to 60 only) to keep the goal within reach.

Hundred Chart

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100



178 one hundred seventy-eight

Hundred chart

Reinforcement

1. Provide several Numeral Cards with two-digit numerals for the students to model using the bean sticks.
2. Review counting by ones using the 100 chart made in the previous lesson. Stress the bridges between decades: 39 ____, 79 ____, and so on.

Review counting by tens and adding tens patterns.

3. Once page 178 has been completed, use it for a listening exercise. Give oral directions such as:
 - a. "Colour 58 green."
 - b. "Colour a number greater than ninety red."
 - c. "Find all the numbers with 8 tens and colour them yellow."
 - d. "Colour numbers with two ones orange."

You will need to vary these directions to make them appropriate to your group of students.

Enrichment

Have the students look for patterns on the hundred chart by colouring every third (or fifth, second, etc.) numeral. Discuss the patterns. Read them aloud. (A hundred chart is provided with this Teacher's Resource Book.)

Extra Practice

Worksheet N35

Pages 177-178

How many beans? Which is greater?

 53	 47	 52	 65	 37	 41
 72	 63	 86	 68	 14	 41

Problem Solving Activities

Assign Level 1, Unit 9

UNIT 9 LESSON 10

Objective N36

Order numerals to 100.

Vocabulary

Direction words: Connect the dots in order.

Materials

Numeral Cards to 100

Two dice

5 × 5 bingo grid

Introducing the Lesson

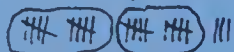
Distribute the Numeral Cards to 100 so that each student has several. Count by ones aloud as the students bring up the Numeral Cards and place them in order on the chalkboard ledge. Turn over several Numeral Cards. See if the students can name them.

Teaching the Lesson

Display the Numeral Cards to 100. Ask the students to find three tens and six, one ten and four, etc. Ask them to tell how many tens and ones there are in a particular number.

Have the students, in turn, roll two dice and call a number using the two numerals that appear. Others record these numerals anywhere on a 5 × 5 bingo grid (provided with this *Teacher's Resource Book*). These filled-in grids can then be used as bingo cards for a reinforcement activity.

Count orally as the students make a tally on the chalkboard for how many pupils are present (or how many chairs are in the room, etc.). Have the students count by ones to get sets of ten, loop them and then count by tens and count on by ones to get the total.

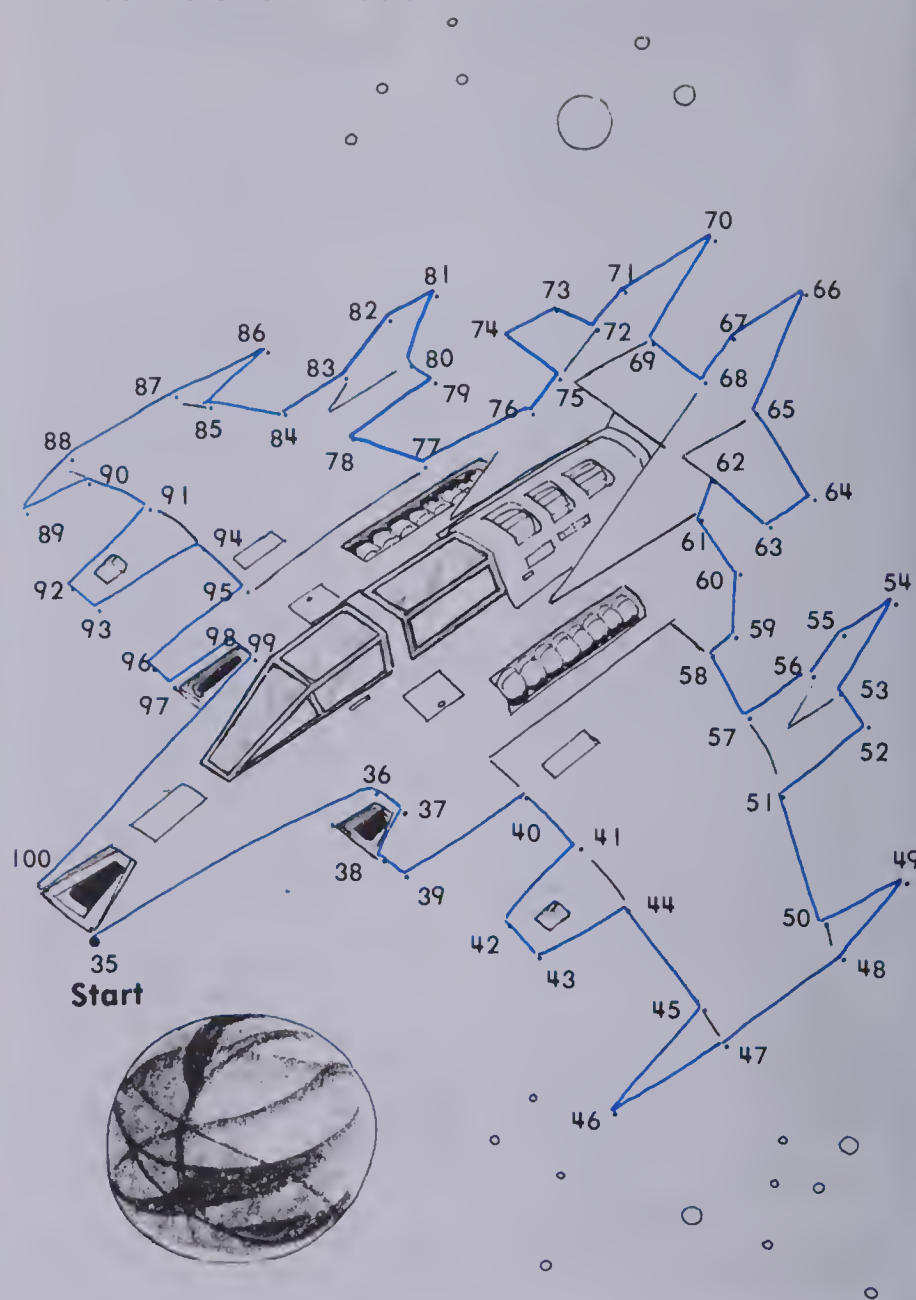


Ten, twenty, twenty-one, twenty-two, twenty-three.

Reinforcement

Provide simple dot-to-dot puzzles for those who are having difficulty.

Connect the dots in order.



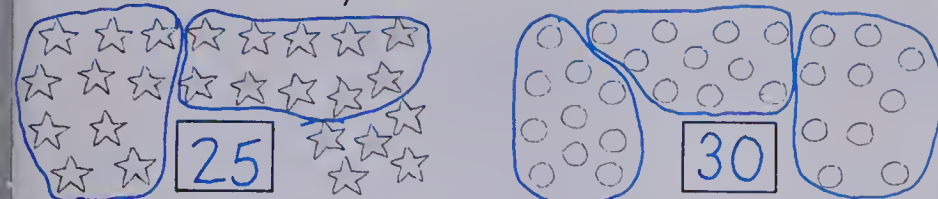
Order numerals to 100

one hundred seventy-nine 179

Using the Page

- To begin the activity on page 179, have the students find the starting point of 35 and trace their finger along the pattern to get the dot-to-dot idea. Once students seem to have the idea, repeat it using a pencil.

Circle tens. How many in all?



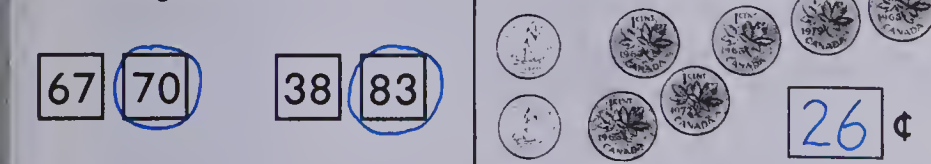
How many tens and ones?



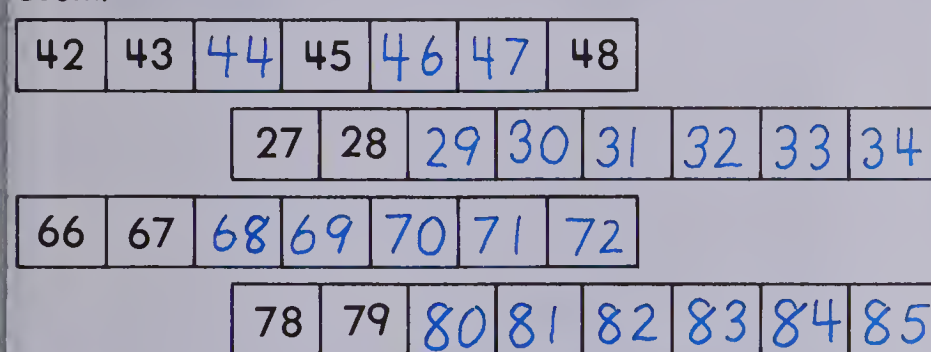
How many in all?



Which is greater?



Count.



180 one hundred eighty

Unit 9 Test

UNIT 9

TEST

Part 1: Find groups of ten in sets to 30.

Part 2: Record tens and ones in a place-value chart.

Part 3: Record two-digit numerals to match sets.

Part 4: Compare two-digit numerals.

Part 5: Count money (dimes and pennies).

Part 6: Order numerals to 100.

Informal Assessment

Especially in the initial stages of working with place value, pencil and paper test exercises cannot always provide a realistic picture of a student's understanding of the concepts involved. Most of these informal testing suggestions involve the use of concrete materials and verbal interpretations to assess comprehension. They may provide a better picture of the child's ability to apply place-value concepts.

1. Can the student count a set of materials grouped in tens (bean sticks, blocks, dimes) by counting? *Ten, twenty, thirty, ...*

2. Can the student count sets of tens and count on ones? *Ten, twenty, thirty, thirty-one, thirty-two.*

*Rote counting skills (by ones to 99, by tens, and oral counting on) are obviously a necessary prerequisite to success in these tasks.

3. Can the student record a list of two-digit numerals using the correct left-right placement of tens and ones? Read these numbers aloud for him or her to record: 41, 16, 21, 65, 50, 82, 90, 47, 30.

4. Can the student read two-digit numerals, e.g., 65, 80, 41, 72, 13, 52, 17? (Watch for confusion with the teens: 81, 18.)

5. Can the student identify tens and ones in a number and build a model of the number using grouping materials?

6. Can the student group a set of counters into tens and ones and record the correct numeral to represent the set?

7. Can the student recognize groups of tens and ones and record the corresponding numeral?

8. Can the student compare sets of grouped objects to identify the greater or lesser set? *This set has more tens, so it must have more altogether.*

9. Can the student order grouping materials on the basis of number?



UNIT 10

Addition and Subtraction to 12

Theme: Gardening

Lesson	Objective		Pages
1	A38	Add, with sums to 10.	181-182
2	A39	Add, with sums to 11.	183-184
3	A40	Add, with sums to 12.	185-186
4	PS5	Solve addition picture problems with sums to 12.	187-188
5	A41	Subtract from minuends to 10.	189-190
6	A42	Subtract from minuends to 11.	191-192
7	A43	Subtract from minuends to 12.	193-194
8	PS6	Solve subtraction picture problems with minuends to 12.	195-196
9	A44	Add or subtract facts and picture problems to sums of 12.	197-198
10	GR2	Interpret bar graphs.	199
Test		Addition and subtraction to 12	200

Vocabulary

- addition names
add one more
addition sentence
dozen
number sentence
part
subtract
minus
subtraction sentence
join
shorter
lowest

sums
count on
related sentences
related names
starting set
whole
separate
related facts
take away
longer
highest
graph

Printed Directions:

Fill the bags with the correct number of seeds.
 Colour the pots with sums of 11.
 Help Carla take away the weeds.
 Subtract to find the missing numbers.
 Colour the sunflowers that have related number facts.
 Pick up the ripe apples.

Materials

Addition Name Cards to 12

Subtraction Name Cards to 12

Numeral Cards for Teacher (T) and Pupil (P)

Sign cards: $=$ $+$ $-$

paper plates

blank cards

wooden blocks

egg cartons

construction paper

felt board

strings

centimetre tape

stickers

glue

counters

beans

seeds

crayons

Plasticene

felt cutouts

pencils

centimetre rulers

macaroni

chart paper

About This Unit

Unit 10 introduces basic addition and subtraction facts for sums of 11 and 12 and consolidates the facts to 10. It emphasizes the relationship between addition and subtraction facts and provides practice with mixed addition and subtraction examples.

The unit is designed for students who are “comfortable” with the facts to 10 (preferably, for those students who are at a recall level with these facts). Ensure that concrete materials are available for those who require them. You may prefer to leave this unit until a later date with less confident or less able students. (Facts beyond 10 are considered enrichment objectives in many curricula; however some students are ready at this point to be introduced to more basic facts.)

For students who don’t appear ready to learn the facts for 11 and 12, continue to provide reinforcement of sums and differences to 10 and work on acquiring recall of these facts as suggested in the introductions to Units 5, 6, and 7 of this *Teacher’s Resource Book*, pages 81E, 81F, 101D, 121D, and 121E. The last two units of the book do not require that students have covered basic facts to 12 (with the exception of pages 217 and 220).

The approach used for addition facts relies in part on two reasoning processes: using names for 10, and adding one more to a known fact. The names-for-ten process should be learned to the point where, given one addend, students can provide the other. Exercises such as this are provided to develop quick recognition of names for 10. These names are then associated with names for 11 by adding one more: $5 + 5 \rightarrow 5 + 6$; $8 + 2 \rightarrow 8 + 3$. Concrete materials are used in lesson activities to introduce the “one more” approach and pupil page exercises provide practice with the idea (see page 184). This same idea can be used with addition facts for 12, by adding two, or by finding a name for 10 and identifying the “leftovers”, e.g., $5 + 5 = 10 \rightarrow 5 + 7 = (5 + 5) + 2$. These ideas are further developed in the second year program.



The approach used for subtraction facts with 11 and 12 develops the idea of addition as the inverse operation and it shows how to use related facts. Emphasis with subtraction to this point has been on recognizing the whole starting set, identifying (by taking away, crossing out, colouring, etc.) a subset, and then identifying the remaining subset. Lesson activities and pupil page exercises in Unit 10 develop the idea that the two subsets, when joined again, make up the starting set. In this way, the reversibility of the operations is emphasized. Using addition facts to help find differences and to see the part-whole relationship involved appears to be developmental in nature. Many children will not develop this understanding until they have had more experience with numbers. The second year program extends the inverse concept introduced in the first year program.

In Unit 10, the problem solving approaches introduced include finding appropriate information from a picture or table, and drawing an illustration to help solve a problem. For the first time, students are asked to print a number sentence to describe a problem situation. This is an extension of previous experience with printing a number name or sentence to match a model (as has been done since Unit 3).

Ideas

Games

1. "Double Dice"

Use a die marked 1 to 6 (or a regular die with  to ). Each player takes a turn rolling the die and doubling the number that appears. If the correct sum is given, the player gets a token (or moves a space on a game board); then the next player takes a turn. Set a time limit for the game, a target such as five tokens, or a certain space on the game board as the finish.

2. "Find a Ten"

Use a deck of cards with the face cards removed. Aces are ones. Deal them all out to 4 to 6 players. The cards are then sorted into pairs that add to 10. Tens are "wild", that is, they may be assigned any value the player wishes to complete a ten-pair. The winner is the player who finds the most tens.

This can also be played as a solitaire game with 10 cards turned up and the rest face down in a pile. As pairs of 10 are found and removed, their positions are filled with cards turned up from the pile one by one. See if all the cards can be used. Count remaining cards as penalty points.

3. "Find Eleven"

The rules are those given for "Find a Ten" above, but tens and aces go together as a pair, and there are no "wild" cards.

4. "Fill the Egg Carton"

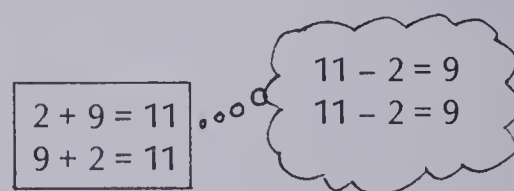
To reinforce names for 12, provide an egg carton for each player and small numeral cards to stand in each egg holder (at least 10 cards for each of the numbers from 3 to 9). Students take turns drawing a card from the face down pile and putting it in one of the egg holders. If a card goes with another to make the sum of twelve, it is placed beside that card. If a card cannot be used to start a new pair, or to match with another card, it is

	9	3
	6	
	7	
	4	8
	5	
	3	

discarded and the next player draws a card. The first player to fill the carton with pairs that have sums of 12 is the winner. If necessary, use an extra egg carton to model the examples, so that students know ahead of time what to look for.

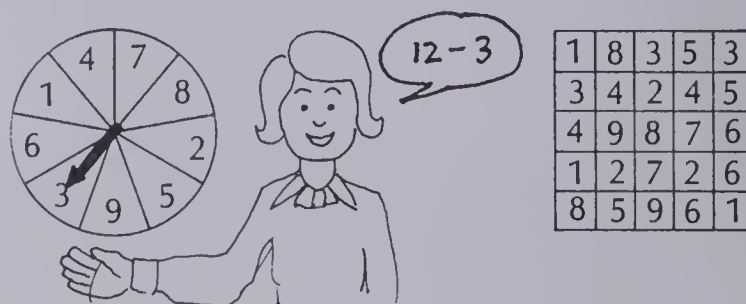
5. "Turn Around"

Prepare a set of cards with two related addition sentences on one side and two inverse subtraction sentences on the other. Cut the top left corner of the addition side of each card so that the cards can be easily stacked with all addition examples facing the same way. Each player takes a turn holding up and reading one side, then trying to guess one of the sentences on the other side. Other players can see the correct answers. If the player can answer correctly, a point is given. Players each try to earn a pre-determined number of points.



6. "Spinner Bingo"

Prepare 5×5 grids on cards for each player. Fill each square with the numerals from 1 to 9 in mixed order. The caller chooses 10, 11, or 12 as the starting set each time, spins the spinner, and gives a subtraction example. The 10, 11, or 12 is used as the minuend and the number indicated on the spinner is used as the subtrahend. Players cover the square having the appropriate answers.



7. "Cover Up"

Use the same cards as for "Spinner Bingo". Each player takes a turn calling a number (10, 11, or 12). Players then cover two spaces on their grids so that the numbers add to the called number. Each player should call his or her covered numbers before another turn. This checks and reinforces the several possible number names. Specify ahead of time what constitutes winning: one row, two rows, whole card, etc.

Bulletin Board

The theme of Unit 10 is *Gardening*. If possible, try to integrate a science unit on "Growing Things" with this unit.

Collect, count, tabulate, and compare collections of different types of seeds. Display this information on the bulletin board.

Change it daily as more seeds are added to the lists.

Types of Seeds		How many?
Flower:	sunflower	12 15
	marigold	35
	petunia	24
Fruit:	orange	8 9 14 23
	grapefruit	2 5 16
	apple	9 14
Vegetable:	pea	46 68
	bean	32
	corn	15 32 41

Plant a variety of types of seeds. Record on a bulletin board chart if and when the seeds germinated, showed leaves, etc.

Plant some sure-fire growers such as runner beans. Use these to measure and record growth charts as suggested in Lesson 1.

Name _____

Pretest

Unit 10

Add.

$$\begin{array}{r} 3 \\ + 8 \\ \hline 11 \end{array}$$

$$\begin{array}{r} 5 \\ + 7 \\ \hline 12 \end{array}$$

$$\begin{array}{r} 6 \\ + 5 \\ \hline 11 \end{array}$$

$$\begin{array}{r} 4 \\ + 8 \\ \hline 12 \end{array}$$

$$\begin{array}{r} 4 \\ + 6 \\ \hline 10 \end{array}$$

Subtract.

$$\begin{array}{r} 12 \\ - 9 \\ \hline 3 \end{array}$$

$$\begin{array}{r} 10 \\ - 3 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 10 \\ - 5 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 12 \\ - 7 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 11 \\ - 2 \\ \hline 9 \end{array}$$

Add or subtract.

$$\begin{array}{r} 3 \\ + 7 \\ \hline 10 \end{array}$$

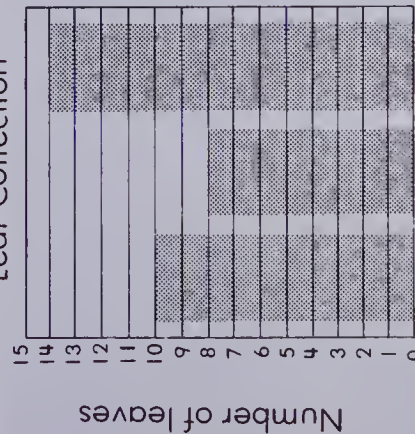
$$\begin{array}{r} 11 \\ - 6 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 8 \\ + 2 \\ \hline 10 \end{array}$$

$$\begin{array}{r} 10 \\ - 4 \\ \hline 6 \end{array}$$

$$\begin{array}{r} 6 \\ + 6 \\ \hline 12 \end{array}$$

Leaf Collection



How many leaves in all?

10 8 12 14

Draw 7 and 5 .

How many in all?


12

Draw 12 in all.

Pick 7 .


5

Name _____

Post-test

Unit 10

Add.

$$\begin{array}{r} 9 \\ + 2 \\ \hline 11 \end{array}$$

$$\begin{array}{r} 5 \\ + 5 \\ \hline 10 \end{array}$$

$$\begin{array}{r} 4 \\ + 8 \\ \hline 12 \end{array}$$

$$\begin{array}{r} 3 \\ + 7 \\ \hline 10 \end{array}$$

$$\begin{array}{r} 9 \\ + 3 \\ \hline 12 \end{array}$$

$$\begin{array}{r} 7 \\ + 4 \\ \hline 11 \end{array}$$

Subtract.

$$\begin{array}{r} 12 \\ - 6 \\ \hline 6 \end{array}$$

$$\begin{array}{r} 11 \\ - 4 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 10 \\ - 2 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 11 \\ - 6 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 12 \\ - 7 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 10 \\ - 8 \\ \hline 2 \end{array}$$

Add or subtract.

$$\begin{array}{r} 11 \\ - 2 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 6 \\ + 4 \\ \hline 10 \end{array}$$

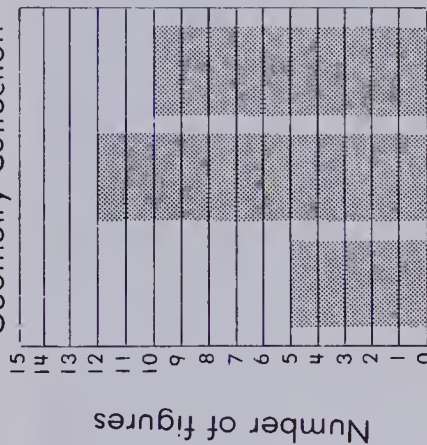
$$\begin{array}{r} 12 \\ - 5 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 5 \\ + 6 \\ \hline 11 \end{array}$$

$$\begin{array}{r} 11 \\ - 8 \\ \hline 3 \end{array}$$

$$\begin{array}{r} 10 \\ - 7 \\ \hline 3 \end{array}$$

Geometry Collection



Draw 4 and 8 .

How many in all?


12

Draw 11 in all.

Pick 2 .



How many figures in all?

5 12 10

Objective A38

Add, with sums to 10.

Vocabulary

Addition names, count on, sums

Direction words: Fill the bags with the correct number of seeds.

Materials

Paper plates

Beans or seeds

Addition Name Cards to 10

Introducing the Lesson

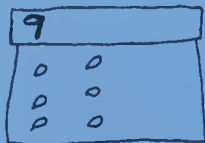
Provide paper plates and seeds or beans as counters for each student. Give directions such as, "Start with five seeds on your plate. Five and how many would give you eight?" *Five and three equal eight.* "Clear your plate. Start with seven..." Review oral counting on from the starting set. *Five, ..., six, seven, eight.*

Teaching the Lesson

Set out paper plates labelled with the numerals from 0 to 10. Shuffle the deck of Addition Name Cards. Pass the deck. Each student takes a card, reads it aloud, gives the sum, and places it on the appropriate plate.

Hold up the name cards for ten. Cover the lesser addend and ask, "What goes with eight to make ten in all?" Review counting on from the greater addend. *Eight, ..., nine, ten. That's two more to get ten.*

Draw a packet of seeds on the chalkboard. Draw six seeds inside the bag.



Point to the label and say, "This bag holds nine seeds. Here are six of them. Six and how many makes nine?" Ask a student to come up and draw the missing seeds. Record $6 + \square = 9$ on the chalkboard. Show how the number sentence describes the situation. Ask a student to fill in the missing number of seeds.



Add.

$$\begin{array}{r} 8 \\ + 2 \\ \hline 10 \end{array}$$

$$\begin{array}{r} 3 \\ + 4 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 9 \\ + 1 \\ \hline 10 \end{array}$$

$$\begin{array}{r} 4 \\ + 6 \\ \hline 10 \end{array}$$

$$\begin{array}{r} 5 \\ + 3 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 4 \\ + 4 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 6 \\ + 3 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 5 \\ + 5 \\ \hline 10 \end{array}$$

$$\begin{array}{r} 2 \\ + 6 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 3 \\ + 7 \\ \hline 10 \end{array}$$

$$\begin{array}{r} 6 \\ + 4 \\ \hline 10 \end{array}$$

$$\begin{array}{r} 5 \\ + 2 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 7 \\ + 2 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 2 \\ + 8 \\ \hline 10 \end{array}$$

$$\begin{array}{r} 5 \\ + 4 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 4 \\ + 2 \\ \hline 6 \end{array}$$

$$\begin{array}{r} 3 \\ + 5 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 7 \\ + 3 \\ \hline 10 \end{array}$$

$$\begin{array}{r} 8 \\ + 0 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 1 \\ + 9 \\ \hline 10 \end{array}$$

Addition facts to 10

one hundred eighty-one 181

Using the Pages

- Page 181 involves practice with naming sums to 10.
- The lesson activity is an introduction to page 182. Complete the first example in each row with the students using the same guided oral format as in the lesson.

Fill the bags with the correct number of seeds.

10 seeds

4 + 6

10 seeds

5 + 5

10 seeds

7 + 3

8 seeds

4 + 4

8 seeds

2 + 6

8 seeds

5 + 3

6 seeds

1 + 5

6 seeds

4 + 2

6 seeds

3 + 3

9 seeds

3 + 6

9 seeds

5 + 4

9 seeds

7 + 2

Reinforcement

1. Have the students draw sets of ten seeds then colour the subsets to show names for ten. If you have a large seed collection and can spare some seeds, have students glue seed patterns to cards to show arrangements for ten.

$$\begin{array}{ccc} \bullet & \bullet & \bullet \\ \bullet & \bullet & \bullet \\ 4 + 6 = 10 \end{array}$$

$$\begin{array}{ccc} \bullet & \bullet & \bullet \\ \bullet & \bullet & \bullet \\ 6 + 4 = 10 \end{array}$$

2. Provide Addition Name Cards and paper plates labelled 0 to 10 for the students to sort on their own.

Enrichment

Select some seeds to grow. Record dates for planting, first growth, first leaves, etc. Measure and record the height of seedlings. Use the data for discussion and comparison.

Extra Practice

Draw. Add.

 8 + 2 = 10	 5 + 4 = 9	 3 + 7 = 10
 4 + 3 = 7	 9 + 1 = 10	 3 + 3 = 6
 7 + 2 = 9	 5 + 5 = 10	 2 + 6 = 8

Worksheet A38

Pages 181-182

UNIT 10 LESSON 2

Objective A39

Add, with sums to 11.

Vocabulary

Add one more, addition names, addition sentence, related addition names

Direction words: Colour the pots with sums of 11.

Materials

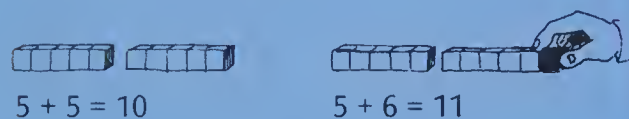
Wooden blocks
Blank name cards
Crayons

Introducing the Lesson

Ahead of time, have the students make sets of ten blocks. Each set should contain blocks of the same colour. Separate each set into two subsets and have the students name the arrangements with an addition sentence.



Ask, "If I add one more to ten, how many blocks will there be?" *Eleven.* "Let's change each set of blocks to make eleven in all."



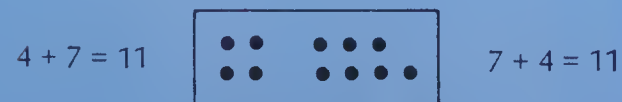
Continue this with each set of blocks.

Teaching the Lesson

Ask the students to describe the sets of blocks. Record the names onto cards. Ask if there are any other names for eleven that could be put on the cards. Limit name cards to one-digit addends if you wish. (10 + 1, 1 + 10, 11 + 0, 0 + 11 are names for eleven but are not considered "basic facts", strictly speaking.) Have the students try to match related addition names for eleven.

$$\boxed{4 + 7} \quad \boxed{7 + 4}$$

Show how both related addition sentences can be associated with the one model or illustration.



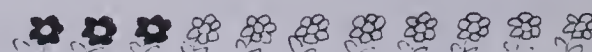
$$1 + 10 = 11$$

$$10 + 1 = 11$$



$$2 + \boxed{9} = 11$$

$$9 + \boxed{2} = 11$$



$$\boxed{3} + \boxed{8} = 11$$

$$\boxed{8} + \boxed{3} = 11$$



$$\boxed{4} + \boxed{7} = 11$$

$$\boxed{7} + \boxed{4} = 11$$



$$\boxed{5} + \boxed{6} = 11$$

$$\boxed{6} + \boxed{5} = 11$$

Add.

$$3 + 8 = \boxed{11}$$

$$5 + 5 = \boxed{10}$$

$$4 + 7 = \boxed{11}$$

$$4 + 6 = \boxed{10}$$

$$9 + 2 = \boxed{11}$$

$$3 + 7 = \boxed{10}$$

$$7 + 4 = \boxed{11}$$

$$9 + 1 = \boxed{10}$$

$$2 + 9 = \boxed{11}$$

$$5 + 4 = \boxed{9}$$

$$8 + 3 = \boxed{11}$$

$$6 + 5 = \boxed{11}$$

$$5 + 6 = \boxed{11}$$

$$7 + 3 = \boxed{10}$$

$$6 + 4 = \boxed{10}$$

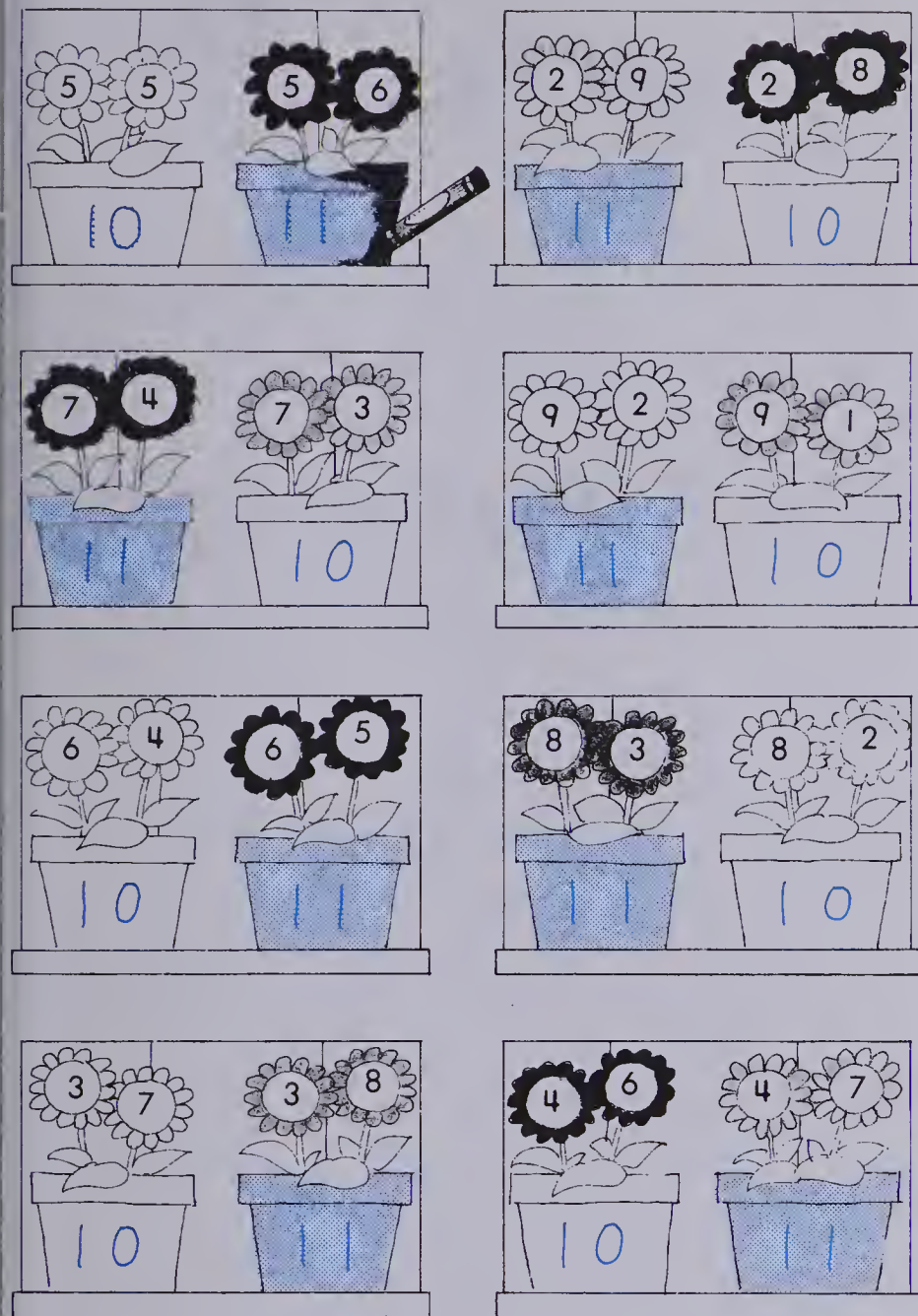
Addition facts for 11

one hundred eighty-three 183

Using the Pages

- Ensure that students are able to give two related names orally for each set of flowers at the top of page 183 before expecting them to record the names.
- On page 184, explain where to record sums and explain also that one pot in each picture has a sum of eleven. That pot should be coloured. Do a few examples with the students to show that the addition names for ten can help find names for eleven: $5 + 5 = 10$ so $5 + 6 = 11$.

Add. Colour the pots with sums of 11.



184 one hundred eighty-four

Addition facts for 10 and 11

Reinforcement

1. Give each student a piece of card, glue, and eleven pieces of macaroni (of two different types). Students use the macaroni to make a design and then glue it down.

2. Have the students record two addition names on cards for each macaroni arrangement similar to the one below. These can be put in a box and used as a sorting game with the macaroni designs.



$$3 + 8 = 11$$

$$8 + 3 = 11$$

Enrichment

Show the students how to develop patterns from known facts, such as addition names for 10.

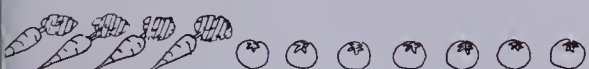
$$5 + 4 = 9$$

$$5 + 5 = 10$$

$$5 + 6 = 11$$

Extra Practice

How many?



$$4 + 7 = 11$$

$$7 + 4 = 11$$



$$6 + 5 = 11$$

$$5 + 6 = 11$$



$$2 + 9 = 11$$

$$9 + 2 = 11$$



$$8 + 3 = 11$$

$$3 + 8 = 11$$

Worksheet A39

Pages 183-184

Objective A40

Add, with sums to 12.

Vocabulary

Dozen, related addition names

Materials

Egg cartons

Plasticene eggs in two colours

Crayons

Introducing the Lesson

Discuss egg cartons, stressing the amount of one dozen. (If you used egg cartons as ten-holders in earlier lessons by cutting off two holders, see that the students realize the difference between the ten-holders and these cartons.)

Fill a carton with 6 eggs of one colour and 6 of another. Ask a student to describe the arrangement with an addition sentence. Record $6 + 6 = 12$. Ask a student to change the egg colours to find another arrangement for twelve.

$6 + 6 = 12$

$7 + 5 = 12$

$5 + 7 = 12$



Continue until all names for twelve, using one-digit addends, have been listed.

Teaching the Lesson

Match pairs of related addition names from the above list.

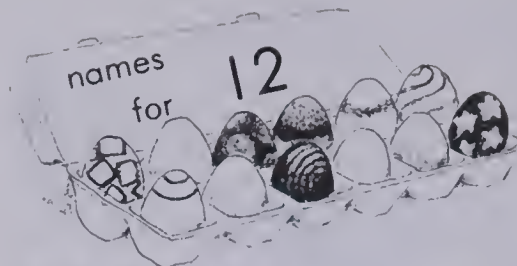
$7 + 5 = 12$ $5 + 7 = 12$

Record the addition names for 12 onto cards.

$9 + 3$ $7 + 5$

If $12 + 0$, $11 + 1$, or $10 + 2$ come up as names for 12, accept these names but emphasize the names with one-digit addends.

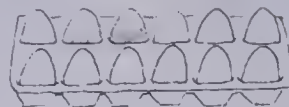
Play a "Guess How Many" game with one egg carton. Using the lid to hide the contents, have the students take turns filling some egg holders and say, "Four eggs are in the carton. How many spaces are empty?" Others guess how many. Then the students count on from four and tally the count to check.



$4 + 8 = 12$



$6 + 6 = 12$



$3 + 9 = 12$



$5 + 7 = 12$



$9 + 3 = 12$



$7 + 5 = 12$



$8 + 4 = 12$

Add.

$6 + 6 = 12$

$4 + 8 = 12$

$8 + 2 = 10$

$6 + 5 = 11$

$4 + 7 = 11$

$8 + 3 = 11$

$6 + 4 = 10$

$4 + 6 = 10$

$8 + 4 = 12$

$5 + 5 = 10$

$9 + 1 = 10$

$7 + 5 = 12$

$5 + 6 = 11$

$9 + 2 = 11$

$7 + 4 = 11$

$5 + 7 = 12$

$9 + 3 = 12$

$7 + 3 = 10$

Addition facts for 12

one hundred eighty-five 185

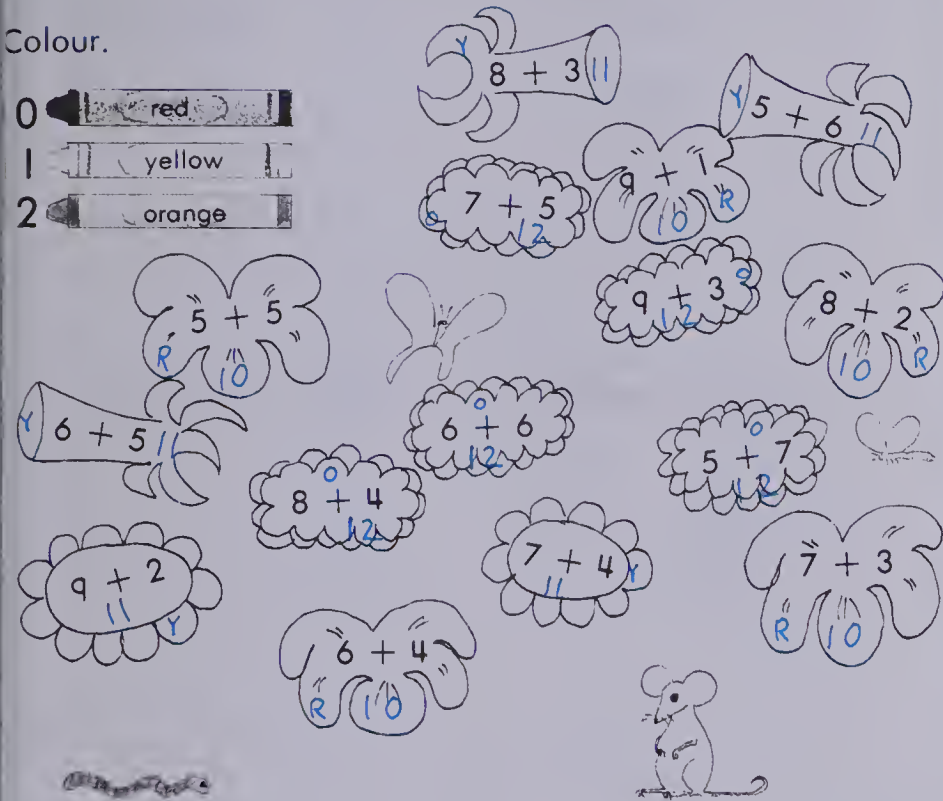
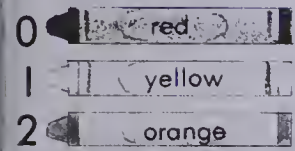
Using the Pages

- Discuss the full egg cartons of 12 on page 185. Ask how many of each colour, for instance, "Four red eggs and eight pink eggs; 12 eggs in all. $4 + 8$ is a name for 12."
- Page 186 is a review of the basic addition facts to twelve. Crayons are required to complete the bottom exercise.

Add.

$\begin{array}{r} 4 \\ + 6 \\ \hline 10 \end{array}$	$\begin{array}{r} 6 \\ + 6 \\ \hline 12 \end{array}$	$\begin{array}{r} 5 \\ + 6 \\ \hline 11 \end{array}$	$\begin{array}{r} 3 \\ + 7 \\ \hline 10 \end{array}$	$\begin{array}{r} 4 \\ + 8 \\ \hline 12 \end{array}$
$\begin{array}{r} 3 \\ + 8 \\ \hline 11 \end{array}$	$\begin{array}{r} 5 \\ + 5 \\ \hline 10 \end{array}$	$\begin{array}{r} 7 \\ + 5 \\ \hline 12 \end{array}$	$\begin{array}{r} 9 \\ + 2 \\ \hline 11 \end{array}$	$\begin{array}{r} 1 \\ + 9 \\ \hline 10 \end{array}$
$\begin{array}{r} 8 \\ + 4 \\ \hline 12 \end{array}$	$\begin{array}{r} 4 \\ + 7 \\ \hline 11 \end{array}$	$\begin{array}{r} 2 \\ + 8 \\ \hline 10 \end{array}$	$\begin{array}{r} 6 \\ + 5 \\ \hline 11 \end{array}$	$\begin{array}{r} 9 \\ + 3 \\ \hline 12 \end{array}$

Colour.



186 one hundred eighty-six

Addition facts to 12

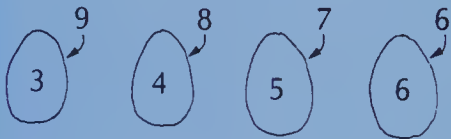
Reinforcement

1. Provide eggs, cartons, and Addition Name Cards for twelve. Ask the students to read a card, and then fill the carton with eggs of two colours to show the name for twelve.

$$4 + 8$$



2. On each side of four different-coloured, egg-shaped cards, write an addend for twelve. The addends on the front and on the back of the card should together make twelve.



Have the students look at the addend on one side and try to guess what goes with it to make twelve. Turn over to check. Make a special 12 basket to hold the eggs.



Enrichment

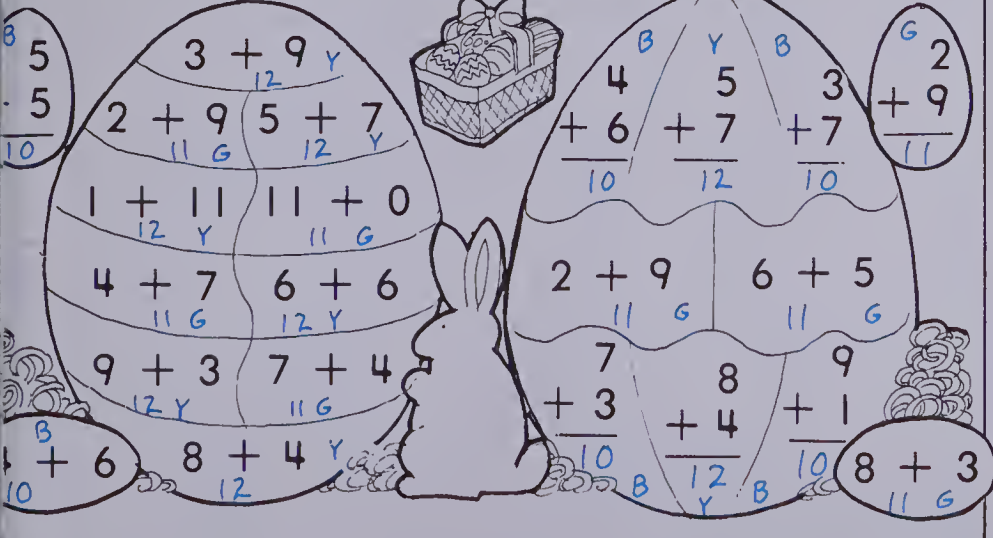
Provide an egg carton and three colours of eggs for each student. See how many different three-colour arrangements the students can find.



$$2 + 4 + 6 = 12$$

Extra Practice

Colour.



Worksheet A40

Pages 185-186

UNIT 10 LESSON 4

Objective PS5

Solve addition picture problems with sums to 12.

Vocabulary

Number sentence

Materials

Construction paper
Paper and crayons

Introducing the Lesson

Prepare construction paper geometric shapes, several of each shape: Δ , \circ , \square , etc. in two colours. Display the paper shapes for discussion. Ask questions to establish the part-whole situations involved. For example, "How many circles are red? How many circles are blue? How many circles are there altogether?"

Teaching the Lesson

To develop the problem-solving skill of finding the appropriate information, draw these shapes on the chalkboard. Ask a student to find how many there are that match the shape.

3 Δ 1 \square 1 \circ red \circ blue Δ

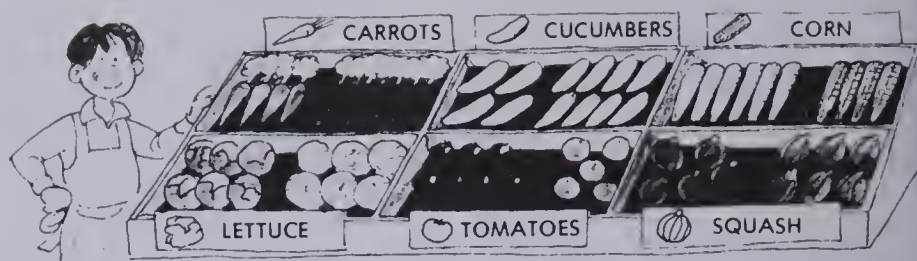
Discuss each example as it is completed.

Print two statements, one below the other, using two colours and one shape. Discuss how to find the number in all. "What numbers are needed? Which operation?" Print a number sentence to show what was done.

- 2 red Δ
4 green Δ $2 + 4 = 6$
6 Δ in all.

Provide paper and crayons for the students. Ask them to draw situations such as these.

Draw two red triangles. Draw five blue triangles. How many triangles do you have in all? *Seven*. How many red? *Two*. How many blue? *Five*. Two plus five gives us seven in all. $2 + 5 = 7$



4 

7 

11 in all

$$4 + 7 = 11$$

7 

5 

12 in all

$$7 + 5 = 12$$

6 

4 

10 in all

$$6 + 4 = 10$$


6 

6 

12 in all

$$6 + 6 = 12$$

5 

6 

11 in all

$$5 + 6 = 11$$

4 

8 

12 in all

$$4 + 8 = 12$$



Problem solving



one hundred eighty-seven 187


Using the Pages

- Do two examples on page 187 with the students. Most students should be able to find and record how many for each vegetable, however some students will need help printing a number sentence to match each example. This part can be done as a guided lesson.
- Page 188 should be used in conjunction with an oral guided lesson for all but your most able and independent workers.


Draw. Print the number sentence.



Draw 6  and 4 .







How many  in all?

$$6 + 4 = 10$$


10  in all



Draw 5  and 7 .







How many  in all?

$$5 + 7 = 12$$


12  in all



Draw 8  and 3 .







How many  in all?

$$8 + 3 = 11$$


11  in all



Draw 7  and 3 .


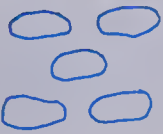




How many  in all?

$$7 + 3 = 10$$


10  in all



Draw 6  and 5 .







How many  in all?

$$6 + 5 = 11$$


11  in all

Draw 4  and 8 .

How many  in all?

$$4 + 8 = 12$$

12  in all

Reinforcement

1. For students experiencing difficulty with these pages, more oral work using objects that can be sorted and counted is required. Use attribute blocks and questions as outlined in the lessons.

2. Provide paper and crayons. Ask the students to draw:

a. 3 red flowers and 6 yellow flowers.

How many flowers in all?

b. 4 tall trees and 2 short trees.

How many trees in all?

c. 6 red apples and 4 green apples.

How many apples in all?

d. 5 fish and 6 turtles.

How many pets in all?



Have students record an addition sentence to describe each picture. Check these sentences on the chalkboard.



Enrichment


Have the students try to make up their own picture problems to match the construction paper shapes. Do several examples with them to ensure they know how to record their ideas.



Extra Practice



How many? Print the number sentence.





6  4 

How many  in all?

$$\boxed{6} + \boxed{4} = \boxed{10}$$





7  5 



How many  in all?


$$\boxed{7} + \boxed{5} = \boxed{12}$$



Worksheet PS5



Pages 187-188





2  9 

How many  in all?

$$\boxed{2} + \boxed{9} = \boxed{11}$$



9  3 

How many  in all?

$$\boxed{9} + \boxed{3} = \boxed{12}$$

UNIT 10 LESSON 5

Objective A41

Subtract from minuends to 10.

Vocabulary

Part, whole, starting set, subtract

Direction words: Help Carla take away the weeds. Subtract to find the missing numbers.

Materials

Paper plates

Beans

Introducing the Lesson

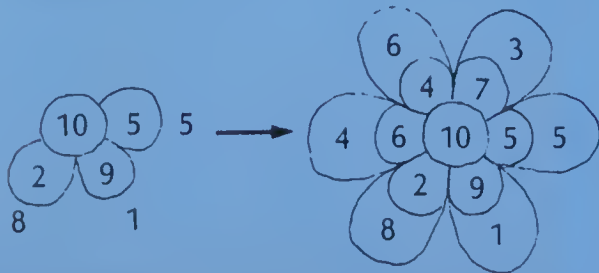
Provide paper plates and beans for modelling number sentences. Record $10 - 4 = \square$ on the chalkboard. Have students start with ten beans, move four aside, and tell how many are left on the other side. Record $10 - 4 = \boxed{6}$. Repeat, using these examples.

$8 - 5 = \square$, $9 - 6 = \square$, $7 - 3 = \square$, $10 - 8 = \square$

Once these examples are complete, go back and point out the two parts which make up the starting set, e.g., $10 - 4 = \boxed{6}$. Record simple examples such as, $10 - 5 = \square$, $6 - 3 = \square$, $5 - 1 = \square$, $7 - 6 = \square$. Ask the students to guess what the other part will be, using addition names as a help.

Teaching the Lesson

Print the numeral 10 inside a circle on the chalkboard. Say, "Let's subtract from ten. I'll show you what to subtract and you tell me what will be left. Use your ten fingers to help if you'd like." Record the subtractions in the petals of a flower.



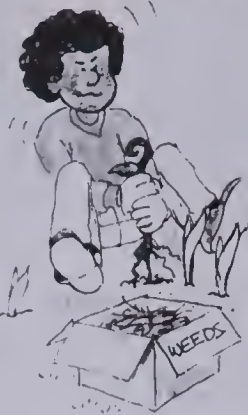
Have the students come up and record answers once they have the idea. Once the flower is complete, point out how all the petals add up to ten if you read in the other direction.



Help Carla take away the weeds.



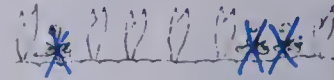
$$7 - 3 = \boxed{4}$$



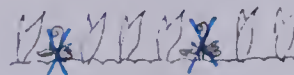
$$10 - 4 = \boxed{6}$$



$$10 - 2 = \boxed{8}$$



$$9 - 3 = \boxed{6}$$



$$8 - 2 = \boxed{6}$$



$$10 - 5 = \boxed{5}$$

Subtract.

$$10 - 5 = \boxed{5}$$

$$9 - 5 = \boxed{4}$$

$$10 - 6 = \boxed{4}$$

$$9 - 3 = \boxed{6}$$

$$10 - 7 = \boxed{3}$$

$$8 - 0 = \boxed{8}$$

$$6 - 2 = \boxed{4}$$

$$8 - 2 = \boxed{6}$$

$$10 - 3 = \boxed{7}$$

$$10 - 9 = \boxed{1}$$

$$7 - 3 = \boxed{4}$$

$$5 - 2 = \boxed{3}$$

$$8 - 5 = \boxed{3}$$

$$9 - 4 = \boxed{5}$$

$$10 - 4 = \boxed{6}$$

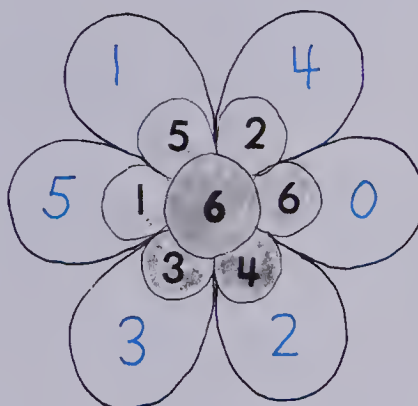
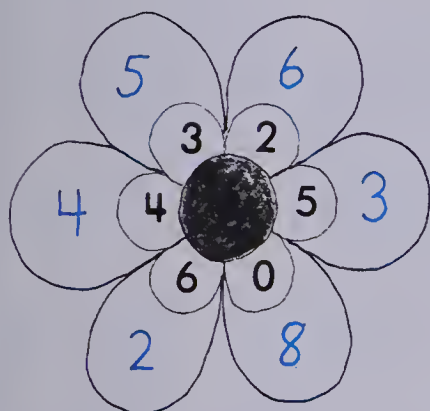
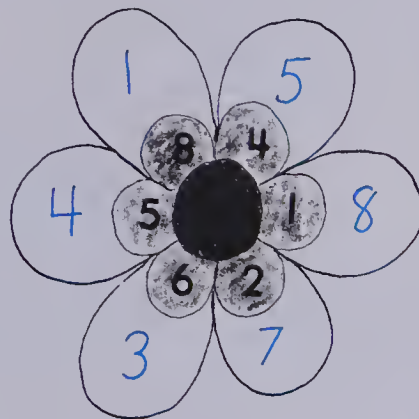
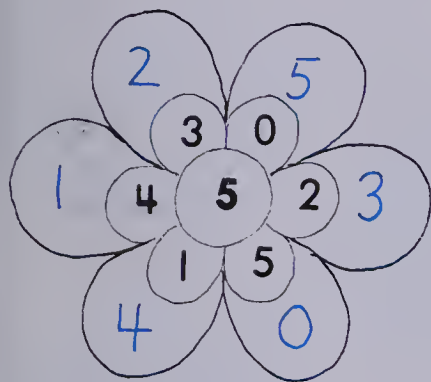
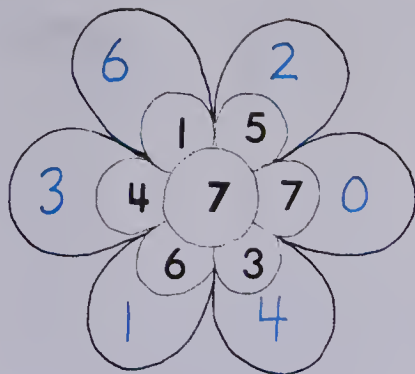
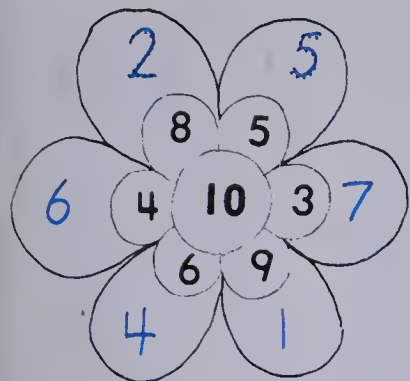
Subtraction facts to 10

one hundred eighty-nine 189

Using the Pages

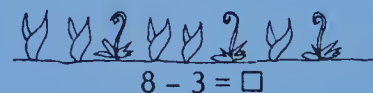
- The lesson activities prepare the students for both pages. Some students may require help with the new format on page 190.

Subtract to find the missing numbers.



Reinforcement

1. Draw a garden with flowers and weeds on the chalkboard. Ask, "How many plants are in the garden? Some are flowers and some are weeds. How many are flowers? How many are weeds? Who can come up and help me do the weeding?"



"Three are weeds. Cross them out. That leaves how many flowers?" *Eight minus three equals five.* Do several examples as an introduction to page 189.

2. Provide counters and paper plates for oral work with addition and subtraction inverse examples.

"Start with four. Add two more."



Now how many? *Six.*



"Take the two away."

Now how many? *Four.*



3. Review subtraction names for numbers. Set out boxes labelled with the numbers from 0 to 9 and Subtraction Name Cards. Ask, "Ten minus six is ...?" *Four.* "Ten minus six is another name for four." The student places the name card in the appropriate box. "Can you find any other names for four?"

$$8 - 6$$

$$9 - 5$$

$$8 - 4$$

Enrichment

Show pairs of students how to play a subtraction game. Start with ten at the top of a large T. One student prints a number less than ten on the left side of the T and the other student tries to think of what number goes with it to make ten. Take turns. Discuss that using either subtraction or addition names can help find the missing number.

10	
4	6

Extra Practice

Cross out. Subtract.

 $10 - 6 = 4$	 $8 - 3 = 5$	 $5 - 2 = 3$
 $9 - 6 = 3$	 $10 - 3 = 7$	 $8 - 6 = 2$
 $10 - 5 = 5$	 $9 - 4 = 5$	 $10 - 2 = 8$

Worksheet A41

Pages 189-190

UNIT 10 LESSON 6

Objective A42

Subtract from minuends to 11.

Vocabulary

Separate, subtract, related subtraction facts

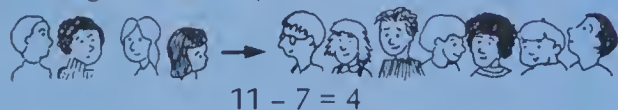
Direction words: Colour the sunflowers that have related number facts.

Materials

Counters
Paper plates
T Numeral Cards to 9
Sign Cards, \square and \square
Crayons

Introducing the Lesson

Ask eleven students to come to the chalkboard. Ask another student to come up and separate the eleven into two groups. Show how to record a subtraction sentence to describe the grouping. Put the groups together again and have another student arrange a new grouping. Help the student record a number sentence for the arrangement. Repeat.



Teaching the Lesson

Provide each student with a paper plate and eleven counters. Print $11 - 6 = \square$ on the chalkboard. Have the students separate a group of 6, leaving a group of 5. Record, $11 - 6 = 5$. Ask, "What do you think will happen if you move your plate around a half turn to show eleven minus five? What is the other group?" Six.



$$11 - 6 = 5$$



$$11 - 5 = 6$$

Record other related pairs of number facts.

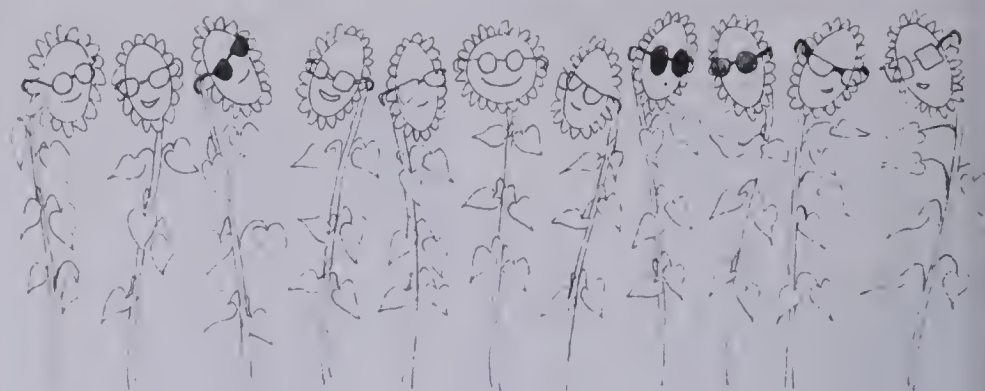
Use the Numeral Cards to show related pairs of facts.

$$5 - 2 = 3$$

$$9 - 6 = 3$$

$$5 - 3 = 2$$

$$9 - 3 = 6$$



$$11 - 1 = 10$$

$$11 - 4 = 7$$

$$11 - 8 = 3$$

$$11 - 5 = 6$$

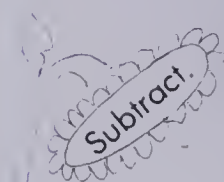
$$11 - 3 = 8$$

$$11 - 9 = 2$$

$$11 - 7 = 4$$

$$11 - 6 = 5$$

$$11 - 2 = 9$$



$$10 - 5 = 5$$

$$10 - 2 = 8$$

$$11 - 5 = 6$$

$$10 - 7 = 3$$

$$11 - 2 = 9$$

$$10 - 3 = 7$$

$$11 - 7 = 4$$

$$10 - 8 = 2$$

$$11 - 3 = 8$$

$$10 - 4 = 6$$

$$11 - 8 = 3$$

$$10 - 9 = 1$$

$$11 - 4 = 7$$

$$10 - 6 = 4$$

$$11 - 9 = 2$$

$$11 - 6 = 5$$

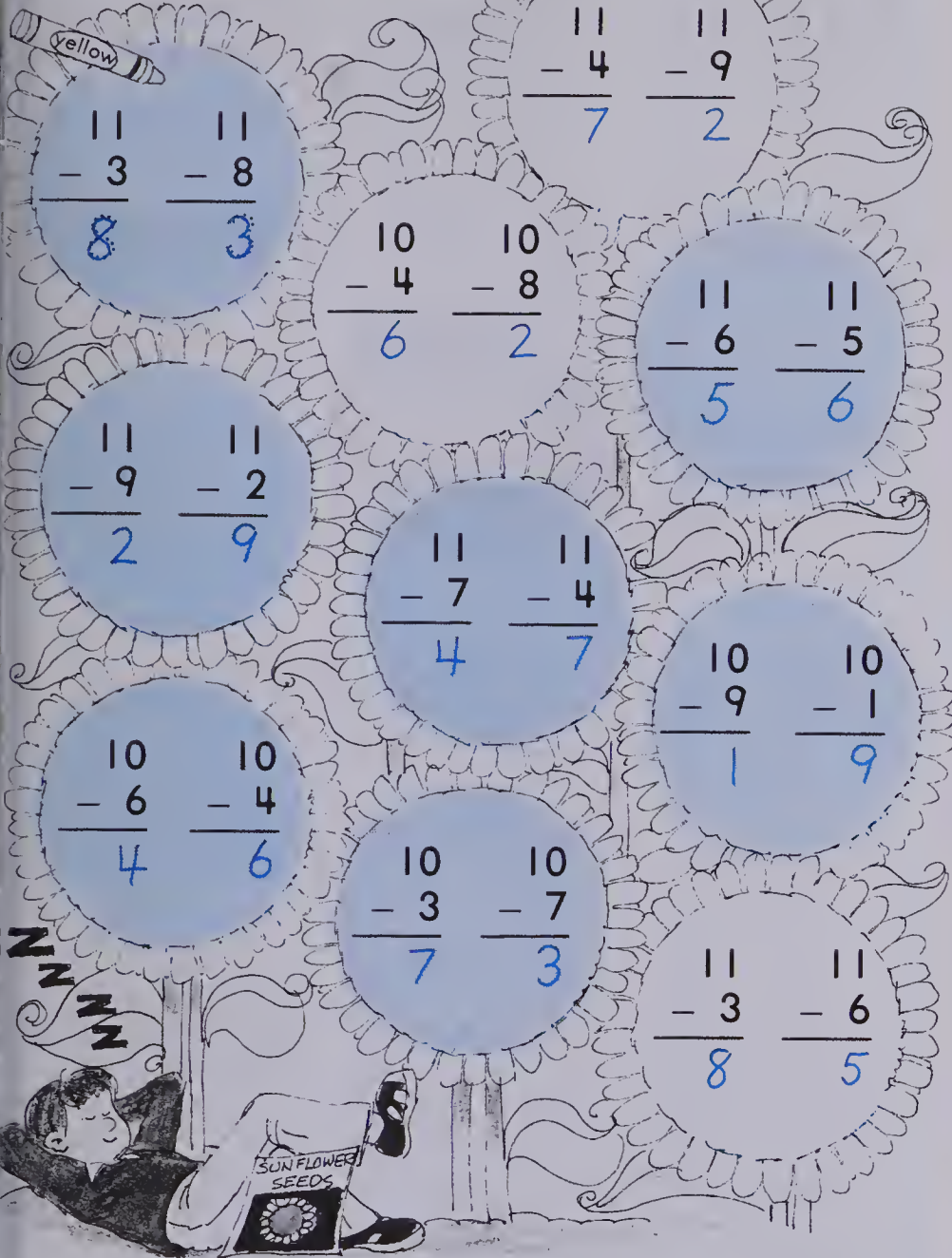
Subtracting from 11

one hundred ninety-one 191

Using the Pages

- The top of page 191 provides a set of eleven sunflowers for the students to use for partitioning. Show them how to cover a subset to find the remaining subset.
- Instruct the students to complete all the number sentences first before colouring flowers with related names. Less able students will require help recognizing related facts. Provide counters.

Subtract. Colour the sunflowers that have related number facts.



192 one hundred ninety-two

Subtracting from 10 and 11; related facts

Reinforcement

1. Have the students draw sets of eleven sunflowers, then colour two subsets to match a given Addition or Subtraction Name Card.



$5 + 6$ or $11 - 5$

2. Provide paper plates marked 0 to 11 and Subtraction Name Cards for sorting.

Enrichment

Show the students how to write their own pairs of related subtraction number facts. Give the following chalkboard examples for copying and completing.

$$\begin{array}{r} 11 \\ - 6 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 11 \\ - 5 \\ \hline 6 \end{array}$$

$$\begin{array}{r} 11 \\ - 8 \\ \hline \end{array}$$

$$\begin{array}{r} 11 \\ - 4 \\ \hline \end{array}$$

$$\begin{array}{r} 11 \\ - 2 \\ \hline \end{array}$$

Extra Practice

Subtract.

$\begin{array}{r} 11 \\ - 6 \\ \hline 5 \end{array}$	$\begin{array}{r} 10 \\ - 4 \\ \hline 6 \end{array}$	$\begin{array}{r} 8 \\ - 7 \\ \hline 1 \end{array}$	$\begin{array}{r} 5 \\ - 2 \\ \hline 3 \end{array}$	$\begin{array}{r} 9 \\ - 6 \\ \hline 3 \end{array}$
$\begin{array}{r} 4 \\ - 1 \\ \hline 3 \end{array}$	$\begin{array}{r} 9 \\ - 5 \\ \hline 4 \end{array}$	$\begin{array}{r} 3 \\ - 0 \\ \hline 3 \end{array}$	$\begin{array}{r} 8 \\ - 4 \\ \hline 4 \end{array}$	$\begin{array}{r} 7 \\ - 7 \\ \hline 0 \end{array}$
$\begin{array}{r} 10 \\ - 5 \\ \hline 5 \end{array}$	$\begin{array}{r} 11 \\ - 7 \\ \hline 4 \end{array}$	$\begin{array}{r} 7 \\ - 2 \\ \hline 5 \end{array}$	$\begin{array}{r} 10 \\ - 2 \\ \hline 8 \end{array}$	$\begin{array}{r} 9 \\ - 0 \\ \hline 9 \end{array}$
$\begin{array}{r} 11 \\ - 3 \\ \hline 8 \end{array}$	$\begin{array}{r} 10 \\ - 7 \\ \hline 3 \end{array}$	$\begin{array}{r} 11 \\ - 5 \\ \hline 6 \end{array}$	$\begin{array}{r} 9 \\ - 4 \\ \hline 5 \end{array}$	$\begin{array}{r} 11 \\ - 9 \\ \hline 2 \end{array}$

Worksheet A42

Pages 191-192

UNIT 10 LESSON 7

Objective A43

Subtract from minuends to 12.

Vocabulary

Minus, take away, subtract, subtraction sentences

Materials

Egg cartons
Plasticene eggs (or blocks)

Introducing the Lesson

Provide egg cartons and twelve Plasticene eggs (or blocks) for each student. To generate the subtraction facts for twelve, give directions such as: "Start with twelve. Take away four. (Put them in the carton lid.) How many eggs are left?" *Twelve minus four is eight.* "Put the four back. Eight and four gives us twelve again."

Repeat. Record a list of subtraction facts from twelve.

$12 - 4 = 8$
 $12 - 7 = 5$
 $12 - 6 = 6$
 $12 - 3 = 9$

Teaching the Lesson

Ask the students to think of addition names for twelve. List these in addition sentences beside the list of subtraction sentences.

Go down the addition sentence list and erase one addend from each. See if the students can supply the missing addend.

$4 + \blacksquare = 12$ $\blacksquare + 5 = 12$
 $6 + \blacksquare = 12$ $\blacksquare + 9 = 12$

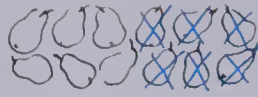
See if students can find one sentence from each list to match, as in $12 - 6 = 6$ and $6 + 6 = 12$. Ask them to try to explain why they matched the ones they did. Use counters to show why they go together.

Review counting by tens and ones, and counting back.

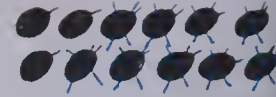
Subtract from 12.



$$12 - 3 = \boxed{9}$$



$$12 - 6 = \boxed{6}$$



$$12 - 9 = \boxed{3}$$



$$12 - 7 = \boxed{5}$$



$$12 - 5 = \boxed{7}$$



$$12 - 4 = \boxed{8}$$



$$12 - 8 = \boxed{4}$$

Subtract.

$$12 - 7 = \boxed{5}$$

$$10 - 5 = \boxed{5}$$

$$12 - 6 = \boxed{6}$$

$$11 - 5 = \boxed{6}$$

$$12 - 8 = \boxed{4}$$

$$11 - 2 = \boxed{9}$$

$$10 - 8 = \boxed{2}$$

$$11 - 4 = \boxed{7}$$

$$12 - 4 = \boxed{8}$$

$$12 - 3 = \boxed{9}$$

$$12 - 5 = \boxed{7}$$

$$12 - 9 = \boxed{3}$$

$$11 - 8 = \boxed{3}$$

$$10 - 7 = \boxed{3}$$

$$11 - 3 = \boxed{8}$$

Subtracting from 12

one hundred ninety-three 193

Using the Pages

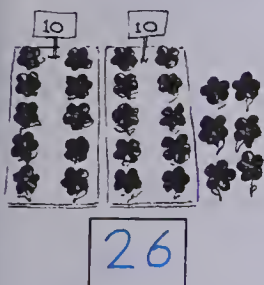
- Each set of fruit on page 193 has twelve pieces. The students are to cross out or loop the subset to be subtracted and then record the number remaining.
- The top of page 194 involves a review of the subtraction facts to twelve. Orally review counting sets of tens and ones at the bottom of the page.

Subtract.

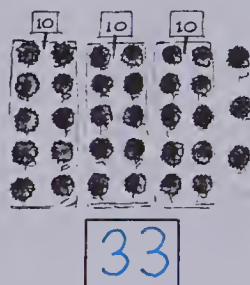
$\begin{array}{r} 12 \\ - 7 \\ \hline 5 \end{array}$	$\begin{array}{r} 11 \\ - 5 \\ \hline 6 \end{array}$	$\begin{array}{r} 12 \\ - 4 \\ \hline 8 \end{array}$	$\begin{array}{r} 10 \\ - 4 \\ \hline 6 \end{array}$	$\begin{array}{r} 12 \\ - 9 \\ \hline 3 \end{array}$
$\begin{array}{r} 11 \\ - 7 \\ \hline 4 \end{array}$	$\begin{array}{r} 12 \\ - 8 \\ \hline 4 \end{array}$	$\begin{array}{r} 12 \\ - 6 \\ \hline 6 \end{array}$	$\begin{array}{r} 12 \\ - 5 \\ \hline 7 \end{array}$	$\begin{array}{r} 10 \\ - 7 \\ \hline 3 \end{array}$
$\begin{array}{r} 12 \\ - 4 \\ \hline 8 \end{array}$	$\begin{array}{r} 11 \\ - 8 \\ \hline 3 \end{array}$	$\begin{array}{r} 11 \\ - 2 \\ \hline 9 \end{array}$	$\begin{array}{r} 12 \\ - 3 \\ \hline 9 \end{array}$	$\begin{array}{r} 11 \\ - 6 \\ \hline 5 \end{array}$

LOOKING BACK

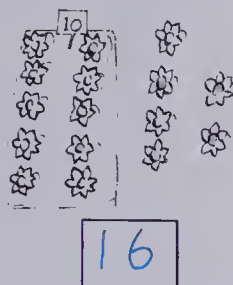
How many?



26



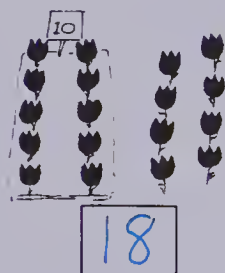
33



16



41



18



29

194 one hundred ninety-four

Subtraction facts to 12

Reinforcement

1. Provide egg cartons and 12 - ■ examples for students to model and record.

2. Provide paper, pencil, and crayons for each student. See if the students can follow oral directions.

"Draw twelve apples. Colour four red. Colour the rest green. How many are green?" $12 - 4 = 8$

Enrichment

Show the students how to make a number path to zero by adding and subtracting on graph paper.

$$12 - 4 = 8 + 2 = 10 - 6 = 4 + 1 = 5 \dots$$

They can then make open number paths to try on a friend.

$$12 - 3 = \dots + 1 = \dots - 5 = \dots + 2 = \dots$$

Extra Practice

Worksheet A43

Pages 193-194

Cross out. Subtract.



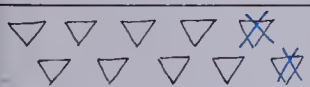
$$12 - 4 = 8$$



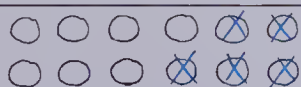
$$11 - 8 = 3$$



$$12 - 7 = 5$$



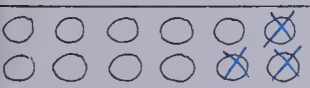
$$10 - 2 = 8$$



$$12 - 5 = 7$$



$$11 - 9 = 2$$



$$12 - 3 = 9$$



$$11 - 5 = 6$$



$$12 - 6 = 6$$

UNIT 10 LESSON 8

Objective PS6

Solve subtraction picture problems with minuends to 12.

Vocabulary

Ripe, number sentence

Direction words: Pick the ripe apples.

Materials

Pieces of stiff card

Felt board

Felt apple cutouts

Introducing the Lesson

Give each student a card (approximately 10 cm × 15 cm). Ask the students to draw ten, eleven, or twelve pieces of one or two kinds of fruit on the cards. They should use no more than two colours for their set of fruit. Use these cards for oral discussion. Describe the cards, using either an addition or a subtraction problem format.

Teaching the Lesson

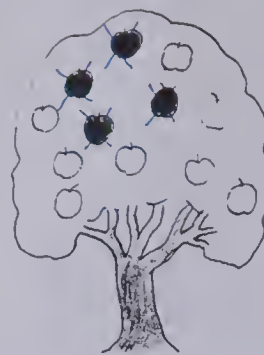
Put 9 red and 3 green felt apples on a felt apple tree. Explain that the red ones are ripe and ready to be picked. Ask a student to help. "How many apples are there on the tree?" *Twelve*. "How many of these apples are ready to be picked?" *Nine*. "Pick them." Record $12 - 9 = \square$. "How many apples are left on the tree?" *Three*. Ask the student to read the number sentence, record the difference, and put a new arrangement of apples up for the next student.

Call several students to the chalkboard. Give directions such as the following. "Draw ten apples. Cross out four to pretend you have picked them. How many apples are left? Record the number sentence to show what you've done." Have the students verbalize the problem situation as they record the number sentence.

Pick the ripe apples ●.



$$11 - 5 = 6$$



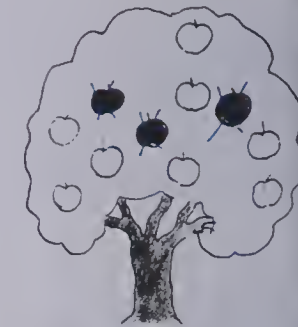
$$12 - 4 = 8$$



$$10 - 7 = 3$$



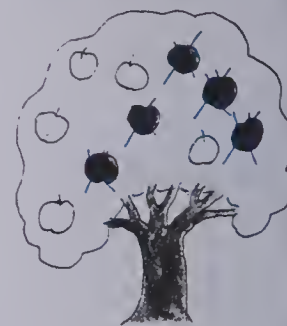
$$12 - 6 = 6$$



$$11 - 3 = 8$$



$$10 - 4 = 6$$



$$12 - 4 = 7$$

$$10 - 5 = 5$$

Subtraction problems

one hundred ninety-five 195

Using the Pages

- Do the three examples at the left side of page 195 with the students. Emphasize the starting set (all apples) and the subset of ripe apples.
- A few of the examples on page 196 should be done with oral discussion. Some students may need help printing a number sentence to match each example.



10 in all Pick 3 .

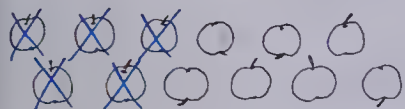


How many are left?

$$10 - 3 = 7$$

7 are left.

12 in all Pick 5 .



How many are left?

$$12 - 5 = 7$$

7 are left.

11 in all Pick 8 .



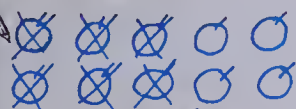
How many are left?

$$11 - 8 = 3$$

3 are left.

Draw 10 in all.

Pick 6 .



How many are left?

$$10 - 6 = 4$$

4 are left.

Draw 11 in all.

Pick 5 .



How many are left?

$$11 - 5 = 6$$

6 are left.

196 one hundred ninety-six

Subtraction problems

Reinforcement

1. Display 10, 11, or 12 felt cutouts of circles or squares in two different colours on a felt board. Tell some stories about them involving the subtraction facts to 12.

There are 12 circles in all.

Take away 3 yellow circles.

How many circles are left?

Help the students to formulate a number sentence for each story.

2. Pretend that each student makes the same number of cookies, say 12. Let them make up stories such as: *If I eat 5 of my cookies, I will have 7 cookies left.*

Enrichment

Pretend the students have a refreshment stand. Display pictures of such items as popcorn, cookies, lemonade, cola, etc. Label the items from 3¢ to 9¢. Tell the students they have 10, 11, or 12 pennies to spend. Have them choose one item to buy and tell how many pennies would be left over from the 10¢, 11¢, or 12¢.

Extra Practice

Worksheet PS6

Pages 195-196

12 in all.



5 fly away. How many are left?

$$12 - 5 = 7$$

7 are left.

11 in all.



3 fly away. How many are left?

$$11 - 3 = 8$$

8 are left.

10 in all.



4 fly away. How many are left?

$$10 - 4 = 6$$

6 are left.

12 in all.



6 fly away. How many are left?

$$12 - 6 = 6$$

6 are left.

Objective A44

Add or subtract facts and picture problems to sums of 12.

Vocabulary

Join, separate, number sentence

Materials

Counters

Paper plates, having sets of counters attached, made in Lesson 6

Introducing the Lesson

Print the name of a student on the chalkboard but omit one letter. See if the students can find the missing letter. After several examples, try putting up a number sentence but omit the + or - sign. Repeat.

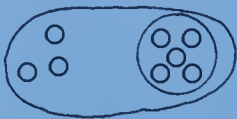
$$4 \bigcirc 6 = 10$$

$$7 \bigcirc 2 = 5$$

Teaching the Lesson

With counters, provide action to show joining and separating two subsets and then record the related number sentences.

$$3 + 5 = 8$$



$$8 - 5 = 3$$

Use the counters glued to paper plates which the students made as part of Lesson 6. Show how the sets can be interpreted as addition or subtraction situations. Describe the situations, rather than moving subsets, with related number sentences.

3 and 5
8 in all
 $3 + 5 = 8$

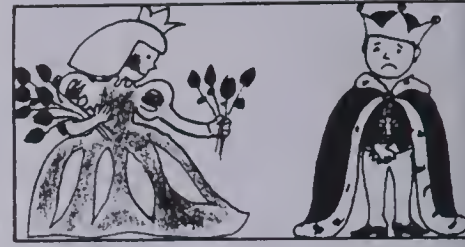


8
5 and 3
 $8 - 5 = 3$

Call several students to the chalkboard. Give directions for addition and subtraction problems. "Draw six apples. Cross out two. How many are left? Did you add or subtract? Can you write a number sentence to show what you did?"



$$7 + 4 = 11$$

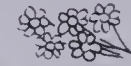


$$11 - 4 = 7$$

Add.

Subtract.

$$6 + 5 = 11$$



$$11 - 5 = 6$$

$$9 + 3 = 12$$



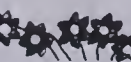
$$12 - 3 = 9$$

$$3 + 7 = 10$$



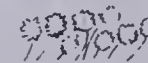
$$10 - 7 = 3$$

$$4 + 5 = 9$$



$$9 - 5 = 4$$

$$8 + 4 = 12$$



$$12 - 4 = 8$$

$$5 + 5 = 10$$

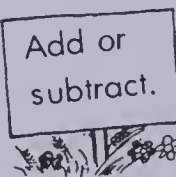


$$10 - 5 = 5$$

$$8 + 3 = 11$$



$$11 - 3 = 8$$



$$\begin{array}{r} 10 \\ - 4 \\ \hline 6 \end{array}$$

$$\begin{array}{r} 9 \\ + 3 \\ \hline 12 \end{array}$$

$$\begin{array}{r} 11 \\ - 5 \\ \hline 6 \end{array}$$

$$\begin{array}{r} 6 \\ + 6 \\ \hline 12 \end{array}$$

$$\begin{array}{r} 2 \\ + 8 \\ \hline 10 \end{array}$$

$$\begin{array}{r} 12 \\ - 3 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 10 \\ - 7 \\ \hline 3 \end{array}$$

$$\begin{array}{r} 8 \\ + 4 \\ \hline 12 \end{array}$$

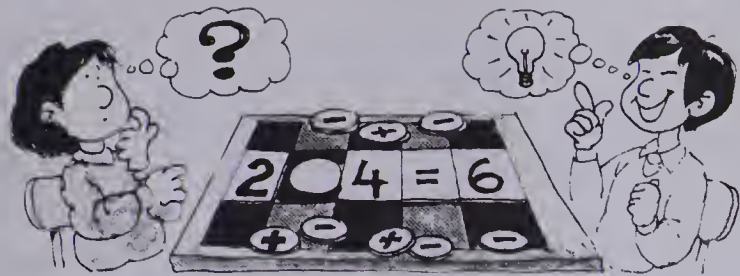
$$\begin{array}{r} 4 \\ + 7 \\ \hline 11 \end{array}$$

Related facts; addition and subtraction to 12

one hundred ninety-seven 197

Using the Pages

- Remind the students to watch the signs carefully on page 197 as both + and - are used.
- Do several examples together on page 198. Some students may require an oral, guided lesson to complete this page.



\oplus or \ominus ?

$6 \oplus 2 = 8$ $3 \ominus 3 = 0$ $11 \ominus 4 = 7$

$5 \ominus 1 = 4$ $8 \oplus 4 = 12$ $7 \oplus 3 = 10$

$7 \oplus 4 = 11$ $6 \oplus 6 = 12$ $10 \ominus 4 = 6$

$9 \oplus 3 = 12$ $9 \ominus 5 = 4$ $8 \ominus 3 = 5$

4 and 7
How many in all?

$4 + 7 = 11$

11 in all

9 and 3
How many in all?

$9 + 3 = 12$

12 in all

12 in all
Pick 6
How many are left?

$12 - 6 = 6$

6 are left.

11 in all
Pick 2
How many are left?

$11 - 2 = 9$

9 are left.

Reinforcement

1. For students having difficulty recording a number sentence to match a problem situation, work with a small group using counters and oral problems.

2. Provide an exercise of mixed addition and subtraction facts to sums of twelve. Use a worksheet or the chalkboard.

$\begin{array}{r} 4 \\ +8 \\ \hline \end{array}$	$\begin{array}{r} 10 \\ -3 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ +2 \\ \hline \end{array}$
$\begin{array}{r} 11 \\ -4 \\ \hline \end{array}$	$\begin{array}{r} 8 \\ +3 \\ \hline \end{array}$	$\begin{array}{r} 12 \\ -6 \\ \hline \end{array}$

Enrichment

Encourage the students to make up examples with missing + or - signs. Trade sets of examples or work in pairs.

Extra Practice

Worksheet A44

Pages 197-198

\oplus or \ominus ?

$3 \oplus 5 = 8$ $5 \ominus 1 = 4$ $9 \oplus 3 = 12$

$2 \oplus 7 = 9$ $10 \ominus 4 = 6$ $6 \oplus 5 = 11$

$6 \ominus 2 = 4$ $6 \oplus 6 = 12$ $12 \ominus 7 = 5$

$2 \oplus 2 = 4$ $11 \ominus 3 = 8$ $10 \ominus 8 = 2$

UNIT 10 LESSON 10

Objective GR2

Interpret bar graphs.

Vocabulary

Longer, shorter, highest, lowest, graph

Materials

Strings and pencils of varying lengths
Stickers
Centimetre tape
Chart paper

Introducing the Lesson

Give each student a piece of string to compare it with:

- a standard length, such as a book edge,
 - other pieces of string,
 - a group of strings; order the group from longest to shortest.
- Repeat using pencils.

Teaching the Lesson

Measure the height of the students using a non-standard measuring device such as a row of 50 to 60 gummed stickers and record how many stickers high each student is. Cut lengths of string to represent the height of each student. These can be labelled and arranged on the wall by height.

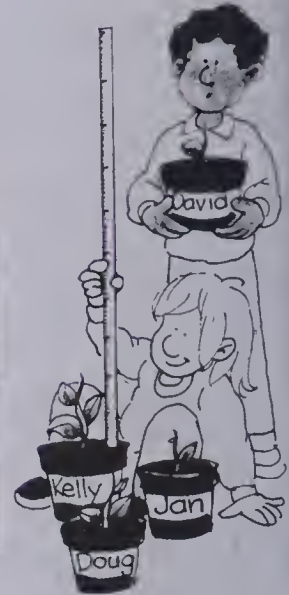
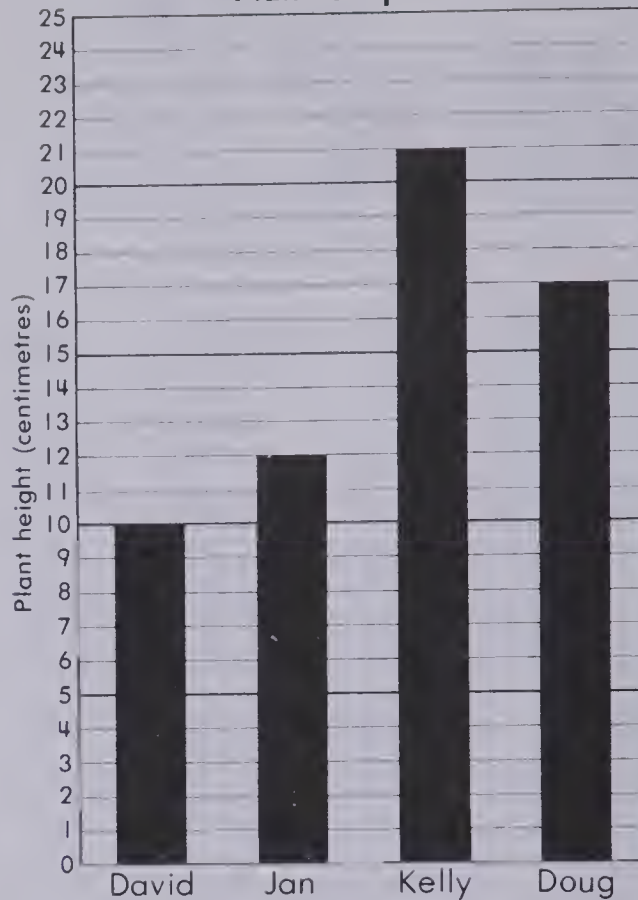


Reinforcement

On a long piece of chart paper, construct a simple graph for recording height. Put **height in centimetres** on the vertical axis and **names of students** on the horizontal axis. Measure the students with the centimetre measuring tape. Using different colours of felt pens, draw a thick vertical line down the graph to represent the height of each student. Label the lines with a matching felt pen. Different colours help to distinguish which name goes with which line.

If you have started seedlings, keep a record of growth. Use a separate graph for each plant and chart growth over a period of weeks.

Plant Graph



Jan's plant is 12 cm high.



David's plant is 10 cm high.



Kelly's plant is 21 cm high.



Doug's plant is 17 cm high.

Bar graph

one hundred ninety-nine 199

Using the Page

- Discuss the graph on page 199: the type of graph, the meaning of the axes and labels, and the comparisons and interpretations that can be made from the data. Read each statement with the students as they find and record the missing information.

Problem Solving Activities

Assign Level 1, Unit 10

Add.

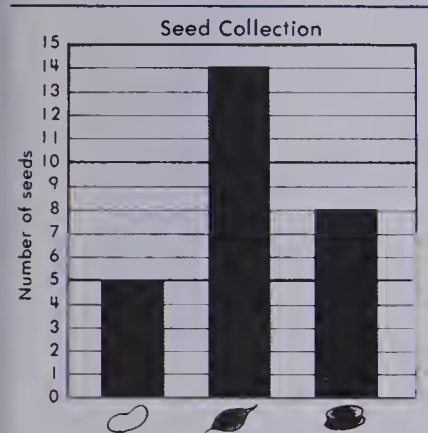
$$\begin{array}{r} 6 \\ + 5 \\ \hline 11 \end{array} \quad \begin{array}{r} 3 \\ + 9 \\ \hline 12 \end{array} \quad \begin{array}{r} 8 \\ + 2 \\ \hline 10 \end{array} \quad \begin{array}{r} 4 \\ + 7 \\ \hline 11 \end{array} \quad \begin{array}{r} 9 \\ + 2 \\ \hline 11 \end{array} \quad \begin{array}{r} 7 \\ + 5 \\ \hline 12 \end{array}$$

Subtract.

$$\begin{array}{r} 11 \\ - 3 \\ \hline 8 \end{array} \quad \begin{array}{r} 10 \\ - 7 \\ \hline 3 \end{array} \quad \begin{array}{r} 12 \\ - 5 \\ \hline 7 \end{array} \quad \begin{array}{r} 11 \\ - 9 \\ \hline 2 \end{array} \quad \begin{array}{r} 12 \\ - 8 \\ \hline 4 \end{array} \quad \begin{array}{r} 12 \\ - 6 \\ \hline 6 \end{array}$$

Add or subtract.

$$\begin{array}{r} 2 \\ + 9 \\ \hline 11 \end{array} \quad \begin{array}{r} 12 \\ - 4 \\ \hline 8 \end{array} \quad \begin{array}{r} 11 \\ - 8 \\ \hline 3 \end{array} \quad \begin{array}{r} 6 \\ + 4 \\ \hline 10 \end{array} \quad \begin{array}{r} 11 \\ - 7 \\ \hline 4 \end{array} \quad \begin{array}{r} 6 \\ + 6 \\ \hline 12 \end{array}$$



How many seeds in all?

$$\begin{array}{r} 8 \\ + 5 \\ \hline 14 \end{array}$$

seeds

Draw 5 and 6 .

How many in all?



$$\begin{array}{r} 11 \end{array}$$

Draw 12 in all.

Pick 4 .



$$\begin{array}{r} 8 \end{array}$$

200 two hundred

Unit 10 Test

UNIT 10

TEST

Part 1: Add and subtract to sums of 12.

Part 2: Interpret bar graphs.

Part 3: Solve addition and subtraction picture problems involving facts to 12.

Informal Assessment

1. Addition Skills

At which level (or levels) does the student respond for addition combinations to sums of twelve?

- immediately recalls sums correctly
- uses a reasoning process such as $5 + 5 = 10$, so $5 + 6 = 11$
- accurately counts on from the greater addend without the use of concrete aids
- counts out sums using counters in a slow but accurate fashion

2. Subtraction Skills

At which level (or levels) does the student respond when given subtraction examples starting with eleven or twelve?

- immediately recalls differences correctly
- uses known addition facts ($6 + 5 = 11$, so $11 - 6 = 5$) or reasons out differences
- counts mentally
- uses aids to model the example and then counts up the remaining subset to find the differences

3. Mixed Addition and Subtraction Skills

Can the student, given a set of mixed examples, change operations as indicated by the signs?

4. Skills in Recognizing Related Number Facts

a. Commutative Property

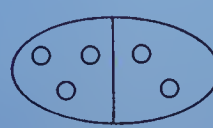
Does the student recognize that, e.g., $6 + 5$ and $5 + 6$ are both names for the same number? Given $7 + 4 = 11$, can the student say or write another addition name using the same addends? ($4 + 7 = 11$) Does the student recognize that this property holds for addition but not for subtraction?

b. Inverse Operations

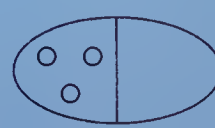
Does the student have any understanding of the reversibility of addition and subtraction? Can he or she describe and predict the size of subsets in a concrete example of adding, then subtracting, a given number?



3



$3 + 2 = 5$



$5 - 2 = ?$

UNIT 11

Fractions and Measurement

Theme: Measuring

Lesson		Objective	Pages
1	G5	Identify shapes that are symmetrical.	201-202
2	N37	Recognize one half.	203-204
3	N38	Recognize one fourth.	205-206
4	M8	Estimate, measure, and compare capacities.	207-208
5	M9	Determine equivalent capacities.	209-210
6	M10	Compare masses to determine the heavier or lighter object.	211-212
7	M11	Mark simple temperature readings.	213-214
8	M12	Cover a surface with squares (informally find areas).	215-216
9	A47	Review addition and subtraction facts and word problems with sums to 12.	217-218
10	PS7	Solve addition and subtraction word problems involving money.	219
Test		Fractions and measurement	220

Vocabulary

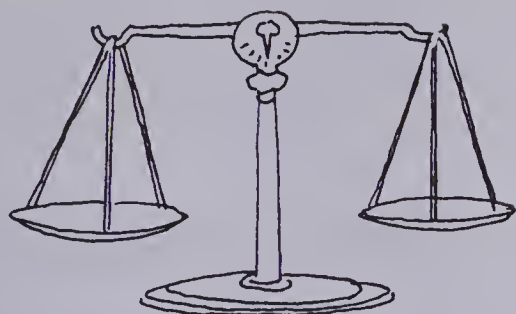
same on both sides	match
centre line	same
one whole	equal
one half	part
four equal parts	hold
one fourth	compare
more	same
estimate	less
full	empty
half litre	litre
heavy	light
heavier	lighter
balance	mass
thermometer	temperature
degrees Celsius	hot
cold	warm
cover	squares
add	subtract
plus	minus
signs	get
spend	in all
left	

Printed Directions:

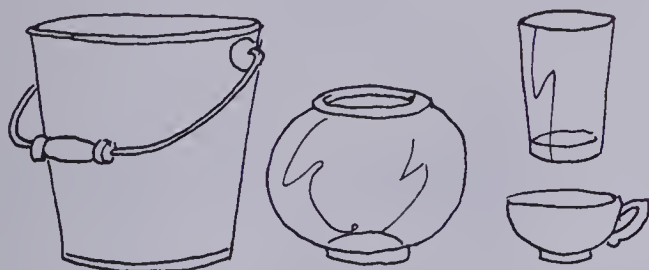
Which pictures will match if folded?
 Mark the pictures that show one half.
 Which is heavier?
 Which is lighter?
 How many squares will cover each figure?

Materials

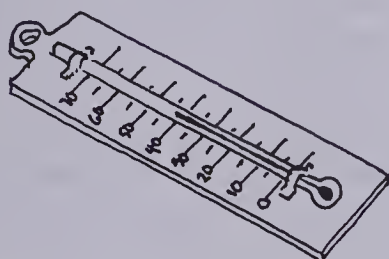
Pan balance scales



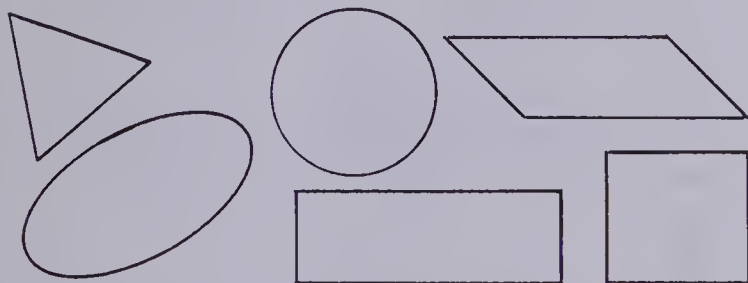
Containers of various sizes



Thermometers



Various paper geometric shapes



Sign cards: $+$ and $-$

construction paper
candy bars
fruit
crackers
interlocking cubes
sand
1 L milk cartons
deck of cards
old magazines
catalogs

scissors
crayons
knives
cards
water
rice
pennies*
graph paper
dice

About This Unit

Unit 11 develops concepts in two important areas, fractions and measurement. Both kinds of concepts are developed in an informal manner with guided, “hands-on” lessons.

Fractions are the only extension of the set of whole numbers treated extensively in elementary school. Historically, they were probably first used in solving measurement problems. Today, their use is more extensive, especially in their decimal form.

In Grade 1, the students are informally introduced to the concepts of one half and one fourth as part of one whole through the use of concrete materials. No emphasis is placed on the notation of these two fractions. In order to help the students with the task of separating a shape in halves (or two equal parts), a lesson on symmetry precedes the lesson on one half.

“Will the two parts match if folded?”



“Colour one half.”

The measurement portion of this unit is an extension of the measurement concepts introduced in Unit 8. It is important that these concepts be introduced in an informal way through discussion and “hands-on” activities. The unit introduces the students to capacity (“Which holds more?”), mass (“Which is heavier? lighter?”), temperature (“About what is the temperature on a warm, sunny day?”), and area (“Cover the surface of the book with squares.”). Most of the activities require the student to compare measures (hotter/colder, heavier/lighter) with no emphasis on the standard units of measurement.

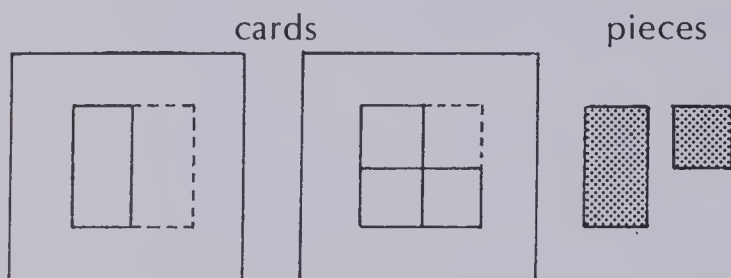
*Available in Houghton Mifflin K-2 Activity Kit.

Ideas

The following are suggestions for further development of geometric, fraction, and measurement concepts. They may be available for student use at a classroom activity centre.

1. Fraction puzzles

Materials: fraction cards and fraction pieces.



Task:

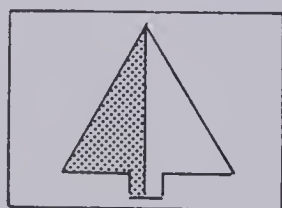
Mix up the fraction pieces and fit them in the open places on the cards.

2. Names of fractions

Materials: fraction cards, word cards: (one, half, fourth).

Task:

Match the word cards with the pictures of the fractions.

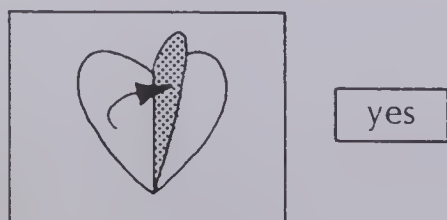


3. Does it match?

Materials: symmetry flip cards (half of a shape can be flipped to the other side), "yes" and "no" cards.

Task:

The student looks at the symmetry flip card and decides whether the part that flips will or will not match the other side. The student then lays down either a yes or no card and flips to test his or her decision.



4. Compare the jars!

Materials: several baby food jars, Plasticene, spray paint, "heaviest", "lightest", and "same" cards. (Fill the jars with Plasticene to one fourth, one half, and to the top and place a lid on the jars. Keep a few jars empty. Spray them with the paint to hide the level of Plasticene.)

Task 1:

Lift each jar and select the heaviest and lightest jar.

Task 2:

Arrange the jars in order from lightest to heaviest.

Task 3:

Find two jars that are the same.

Task 4:

Use a simple balance scale to test that two jars are the same.

5. How much does it hold?

Materials: a variety of jars and bottles, a small tub of rice, elastic bands, scoop, funnel; "more", "less", and "same" cards.

Task 1:

Place elastic bands around the jars or bottles. Fill one jar with rice to the elastic band. Take another jar. "Which of the two jars holds more?" Pour the rice from one jar to the other jar to test it. Place a "more" card by the jar which holds more.

Task 2:

Obtain several paper cups. Fill a jar with rice. Estimate how many cups it will fill. Pour the rice into the cups and check the estimate.

Task 3:

Find jars that hold about a litre. Fill an actual litre container full of rice. Check to see if the jars hold about a litre by pouring the rice into them one at a time.

Name _____

Pretest

Unit 11

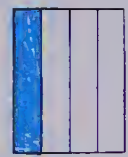
Which pictures will match if folded?



Colour.



one half

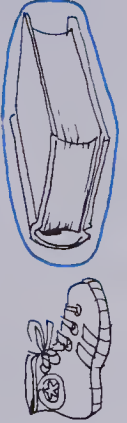


one fourth

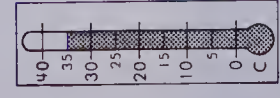
Which holds more?



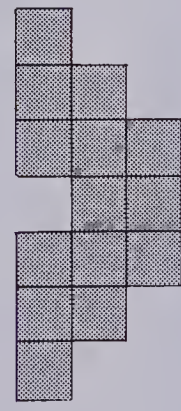
Which is heavier?



How many ☐ cover the figure?



35°C



14 ☐

Add or subtract.

$$\begin{array}{r} 7 \\ + 3 \\ \hline 10 \end{array} \quad \begin{array}{r} 10 \\ - 2 \\ \hline 8 \end{array} \quad \begin{array}{r} 6 \\ + 5 \\ \hline 11 \end{array} \quad \begin{array}{r} 12 \\ - 6 \\ \hline 6 \end{array} \quad \begin{array}{r} 11 \\ - 4 \\ \hline 7 \end{array} \quad \begin{array}{r} 8 \\ + 4 \\ \hline 12 \end{array}$$

Have 11¢

Spend 6¢

How much is left?

5¢

Have 8¢

Get 4¢

How much in all?

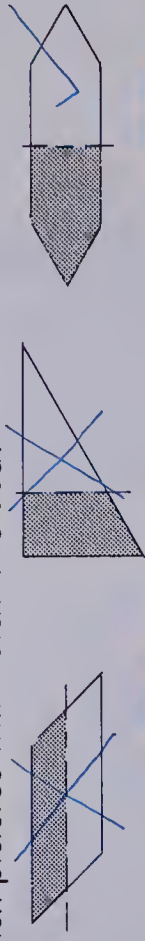
12¢

Name _____

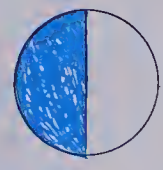
Post-test

Unit 11

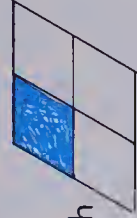
Which pictures will match if folded?



Colour.

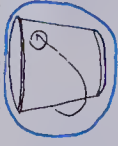


one half



one fourth

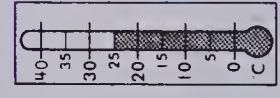
Which holds more?



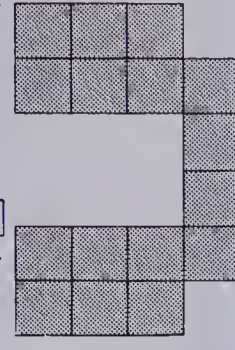
Which is heavier?



How many ☐ cover the figure?



25°C



16 ☐

Add or subtract.

$$\begin{array}{r} 5 \\ + 7 \\ \hline 12 \end{array} \quad \begin{array}{r} 8 \\ - 6 \\ \hline 2 \end{array} \quad \begin{array}{r} 11 \\ - 4 \\ \hline 7 \end{array} \quad \begin{array}{r} 9 \\ + 3 \\ \hline 12 \end{array} \quad \begin{array}{r} 10 \\ - 7 \\ \hline 3 \end{array} \quad \begin{array}{r} 5 \\ + 6 \\ \hline 11 \end{array} \quad \begin{array}{r} 4 \\ + 8 \\ \hline 12 \end{array}$$

Have 12¢

Spend 5¢

How much is left?

7¢

Have 3¢

Get 8¢

How much in all?

11¢

UNIT 11 LESSON 1

Objective G5

Identify shapes that are symmetrical.

Vocabulary

Match, same on both sides, centre line

Direction words: Which pictures will match if folded?

Materials

Construction paper

A leaf for each student

Scissors

Crayons

Introducing the Lesson

Draw half of a mouth and one eye in ink or dark-coloured chalk on a circular piece of paper. "Is the face all there?" Fold the face along the centre line. Show that the face is now complete. Point out the centre fold line and explain that on either side of it features are the same. Refer to the eyes, the mouth, the ears, and the shape of the head as matching, or being the same on both sides.



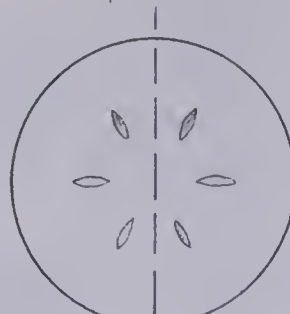
Teaching the Lesson

Make a collection of geometric shapes and real objects which have been cut out of construction paper. Hold up each shape one at a time. Talk about its shape. Have the students decide if the sides of the shape will match if folded on a centre line. Ask a student to fold the shape to check the estimate. As each shape is discussed and tested, have the students describe the situation using the terms *match* and *same on both sides*.

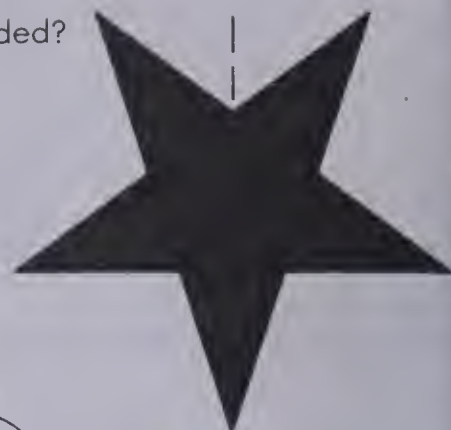
Sketch a teapot, a sugar bowl, and a cup on the chalkboard. Draw in the centre line. Ask which picture is the same on both sides of the centre line.



Which pictures will match if folded?



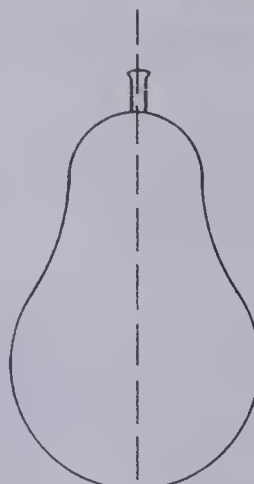
Yes | No



Yes | No



Yes | No



Yes | No



Yes | No



Yes | No



Yes | No

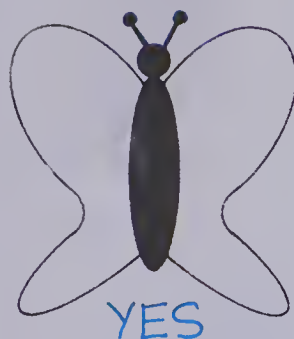
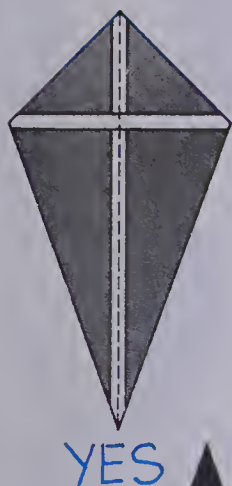
Symmetry

two hundred one 201

Using the Pages

- Ask the students to identify the shapes on page 201. Have them look at each shape and decide whether the shape will match on both sides if folded.
- For page 202, the students should first estimate whether the two sides of the shape will match and then check their estimate by cutting out the shape and folding it along the dotted line.

Cut out the pictures.
Fold on the dotted line.
Which ones match?

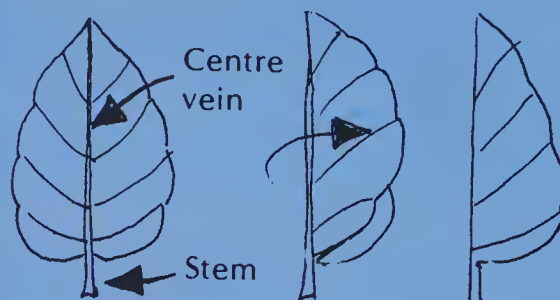


202 two hundred two

Symmetry

Reinforcement

1. Give each student a leaf and ask the students to study them. Have the pupils look at the centre vein. Ask students to say something about the centre and the shapes on each side of the vein. Then have them fold to check that both sides match.

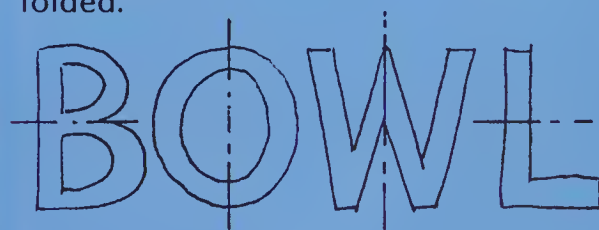


2. Give each student a folded sheet of paper. Have them sketch a shape on one side along the folded edge. Then have them cut the shape out and open it up. Have the students describe the shapes.



3. Students can trace around a hand or foot, can, box, or jar and determine if the traced shapes match when they are folded. They should cut the tracings out to check.

4. Provide a set of large block letters cut out of construction paper. Have the students determine (by estimating and folding) which ones match when folded.

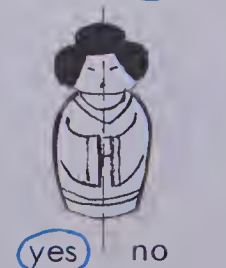
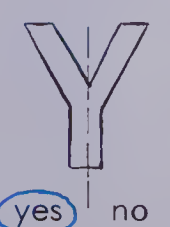
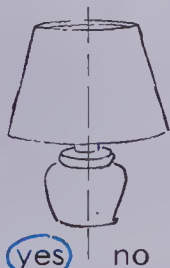


Enrichment

Have the students find and cut out pictures, from old magazines or catalogs, of items whose two sides would and would not match if folded. Ask them to sort the two kinds of pictures and then glue them to a large poster for display.

Extra Practice

Which pictures will match if folded?



Worksheet G5

Pages 201-202

UNIT 11 LESSON 2

Objective N37

Recognize one half.

Vocabulary

Same, equal, one whole, one half

Direction words: Mark the pictures that show one half.

Materials

Candy bars

Apple, orange

Rectangular paper shapes

Construction paper shapes from previous lesson

Introducing the Lesson

Ask the students, "When mother asks Mandy and Reed to share a candy bar, what does she mean? How could they do it? What sort of dividing would both Mandy and Reed think was fair? What might cause an argument?"

Demonstrate the situation with candy bars.



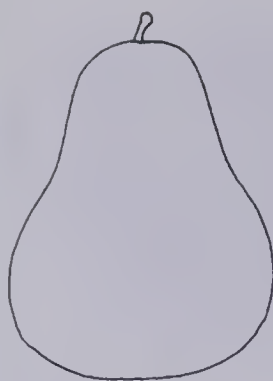
Ask which pieces are the same on both sides. Point out that these pieces are equal. Explain that, when there are two equal pieces of a candy bar, each person gets *one half*.

Teaching the Lesson

Show the students an apple (or orange). Point out that it is **one whole** apple. Cut it in two equal parts. "How many parts? Are the parts the same size? Are the parts equal? What do we call one part?" *A half*

Give each student a rectangular strip of paper and ask the students to fold them into two equal (matching) parts. Then they are to open them up and colour one of the two parts. Ask, "What part of the strip is coloured? What part is not coloured?"

Display several construction paper shapes having a centre fold line from the previous symmetry lesson. Ask the students, in turn, to determine which shapes can be folded in two halves and which shapes can not. Then have them fold the shapes on the centre line to check the two halves.



one half



one half



one half

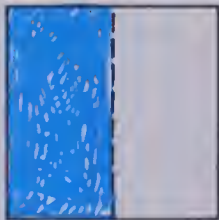


one half



one half

Colour one half.



One half



two hundred three 203

Using the Pages

- Talk about the illustrations of one half at the top of page 203. Then provide crayons for the students to colour a half of each of the illustrations.
- On page 204 have the students circle the illustrations having one half coloured. For each example, ask a student to point out the two equal or unequal parts of the whole. The students can then explain why the two unequal parts would not match.

Mark the pictures that show one half.

204 two hundred four

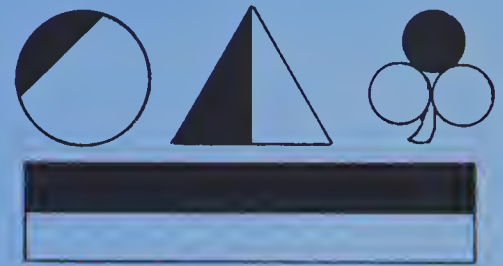
One half

Extra Practice
Colour one half.

Worksheet N37
Pages 203-204

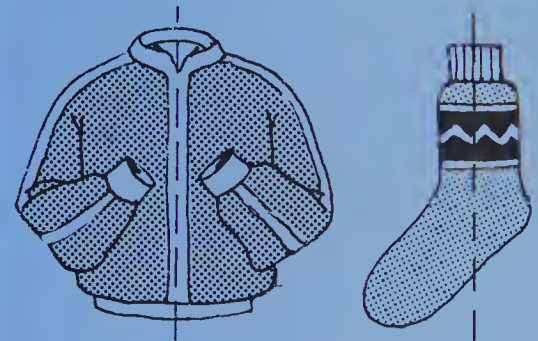
Reinforcement

1. Sketch the following on the chalkboard. Have the students identify the drawings that show one half shaded.



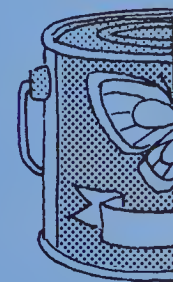
2. Have the students trace several classroom objects (books, boxes, rulers, erasers, etc.), cut out the shapes, and fold them into two halves.

3. Cut out pictures from magazines or catalogs. Attach them to cards and mark them with a line as shown. Have the students determine which pictures show two halves and which do not.



Enrichment

1. Cut pictures from magazines or catalogs in half. Attach them to construction paper. Ask the students to draw the other half.



2. Provide a worksheet of geometric shapes. Ask the students to draw lines and colour one part to show one half in several different ways.



UNIT 11 LESSON 3

Objective N38

Recognize one fourth.

Vocabulary

Whole, part, four equal parts, one fourth

Direction words: Mark the pictures that show one fourth.

Materials

Apples, knives, candy bars, crackers
Interlocking cubes
Sets of paper geometric shapes
Crayons

Introducing the Lesson

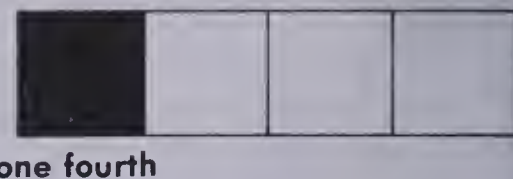
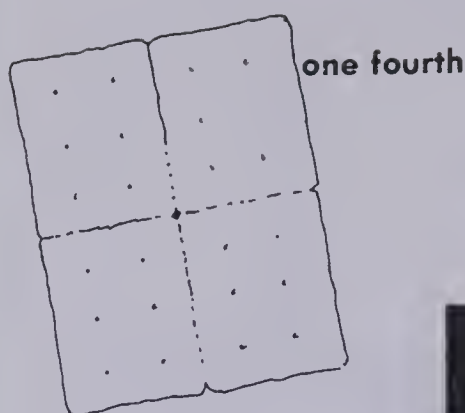
Divide the group into teams of four students. Give each group one apple. Point out that each group has one **whole** apple. Give each group the task of sharing one apple with four people. Let each group discuss how they would do it. Have students conclude that one **whole** apple needs to be separated into **four equal parts**. Have the students give directions how to cut the apple. "How much of the apple will each student get?" *One fourth.*

Teaching the Lesson

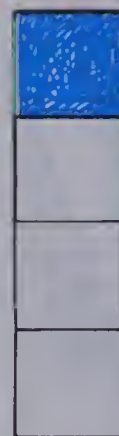
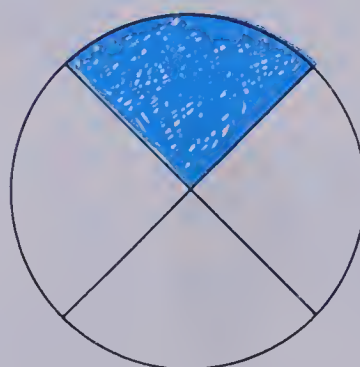
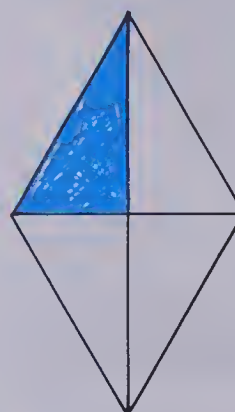
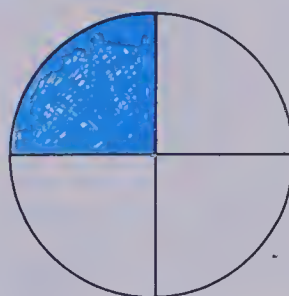
Provide the teams of four students with candy bars, crackers, interlocking cubes, etc., having four parts. Ask them to share the items equally. "How much will each student get?" *One fourth.*

Give each student a rectangular strip of paper. Have the pupils fold the paper into four equal parts. "How many parts? Are the parts the same size?" Colour one part. "What will we call that part?" *One fourth.* Repeat with pieces of paper cut in the shape of a circle, square, hexagon, and/or diamond.

Sketch various geometric shapes on the chalkboard. Mark them into four equal parts. Have the students, in turn, count the four parts and shade in one part for one fourth.



Colour one fourth.



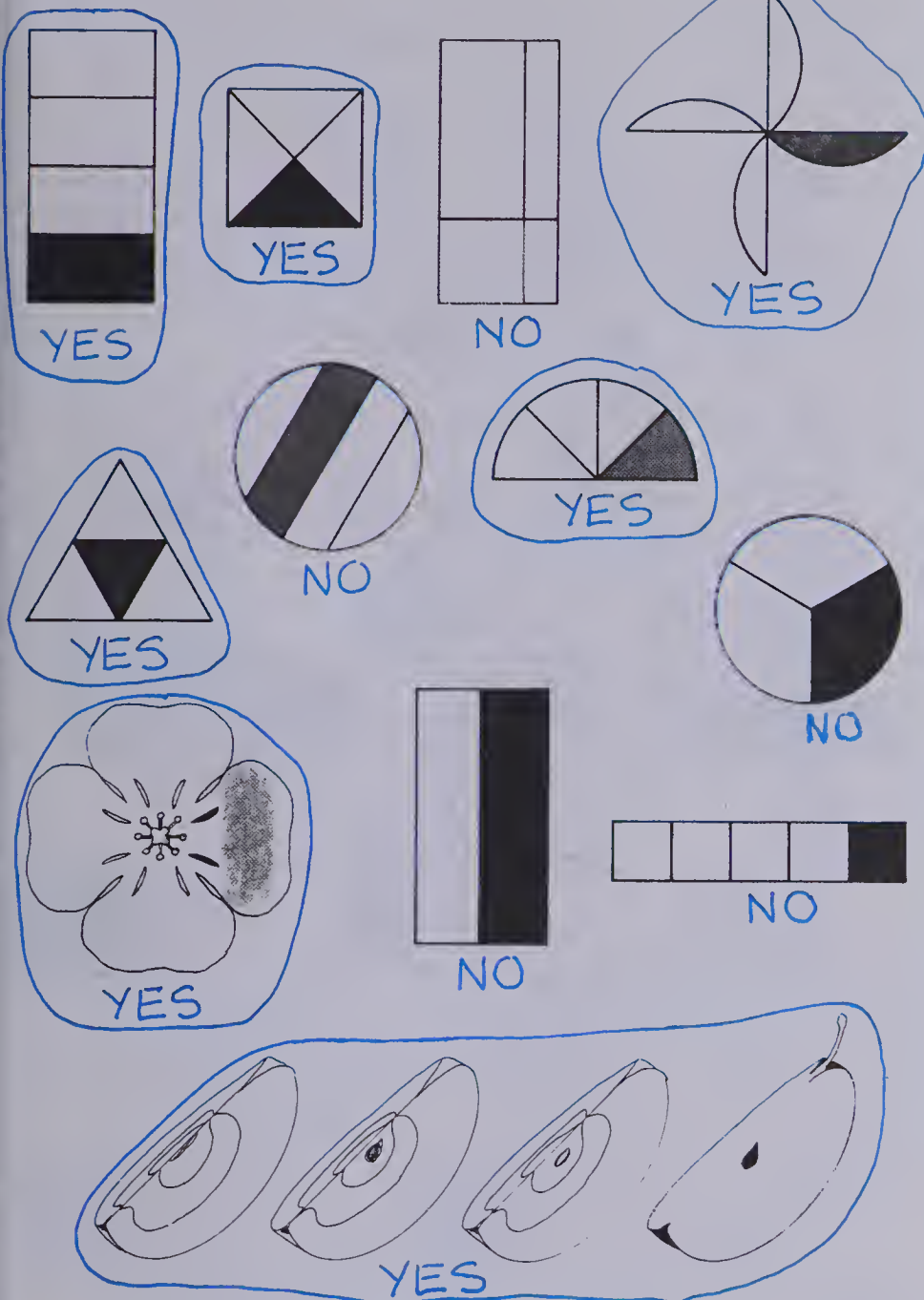
One fourth

two hundred five 205

Using the Pages

- Discuss the illustrations of one fourth at the top of page 205. Point out the word "four" in one fourth. Then have the students colour one fourth of each shape at the bottom of the page.
- On page 206, remind the students to check to see that each picture is separated into four equal parts before they mark those which show one fourth.

Mark the pictures that show one fourth.



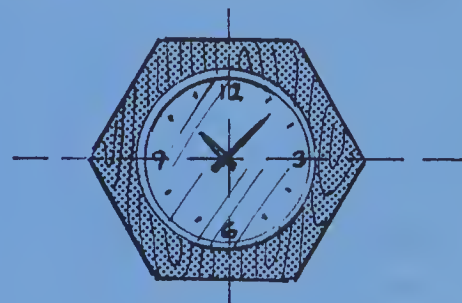
206 two hundred six

One fourth

Reinforcement

1. Have the students trace various classroom objects or geometric shapes, cut them out, fold them into four equal parts, and colour one fourth. Display their work.

2. Cut pictures from magazines or catalogs and attach them to cards. Mark each with two lines. Have the students determine which pictures have been divided into fourths.



Enrichment

1. Cut out pictures from magazines or catalogs with one fourth missing. Attach them to cards. Ask the students to draw the missing fourth.

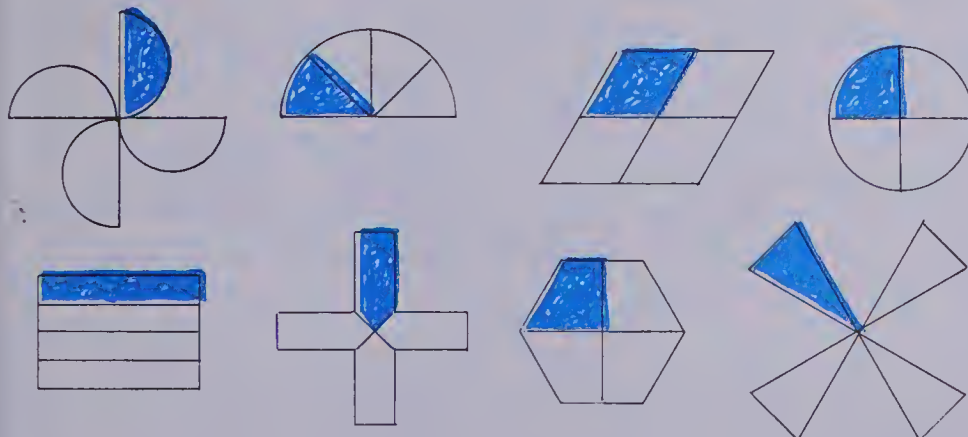


2. Provide a worksheet of geometric shapes. Ask the students to draw lines dividing the shapes into fourths and showing one fourth in different ways.



Extra Practice

Colour one fourth.



Worksheet N38

Pages 205-206

Objective M8

Estimate, measure, and compare capacities.

Vocabulary

Hold, compare, more, same, less, estimate

Materials

Several containers
Water, rice, or sand
Cards
Crayons

Introducing the Lesson

Since the ability to think in terms of capacity depends on first-hand experience in filling, emptying, and comparing the contents of a wide variety of containers, this lesson should follow informal activities involving capacity as described in the introduction to this unit. After these activities, the two-dimensional activities on the pupil pages should be more meaningful.

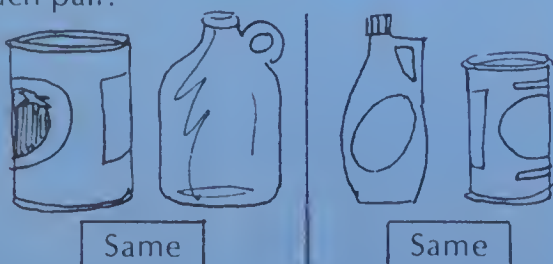
Teaching the Lesson

Put out several containers of various sizes and a coffee mug. Ask the students which containers look like they hold more than the mug. Separate these and place labels beside each group of containers.


Less than 	More than 
About the same as 	

Test these estimates using water, rice, or sand. Discuss how this can best be done (by counting the scoops it takes to fill something or by filling one jar and dumping it in another).

From the same collection of containers, have the students make pairs of jars they think hold the same amount. Have them place a label, same, beside each pair.




These hold

less than 


small plant pot
glass
toy boat
cup
bottle
shovel

These hold about

the same as 

jar
thermos
large plant pot
ball
pitcher

These hold

more than 

big bucket
cooler
garbage can
wagon
pool
canoe

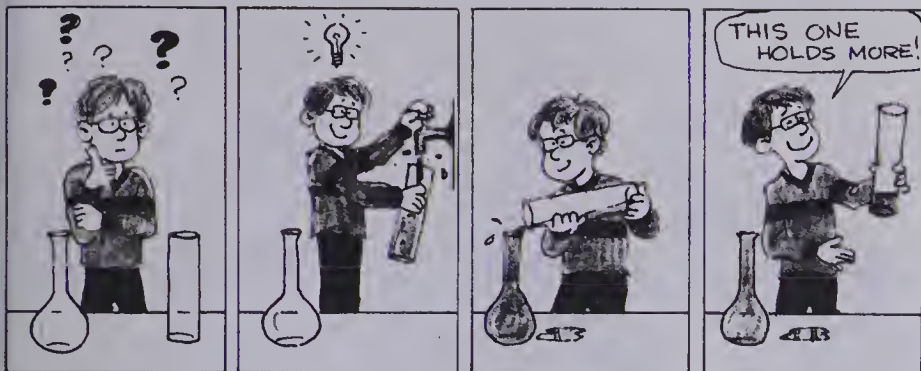
Capacity

two hundred seven 207

Using the Pages

- Page 207 is meant to be an oral, guided lesson. Discuss the illustration and point out the girl's bucket. Remind the students of the activity in the lesson where they compared containers to the mug. Now the containers will be compared to her bucket in the same manner. Students can either draw a line from each object to the "less than", "same as", and "more than" sections or they may draw a picture of the objects.
- Discuss the cartoon at the top of page 208. Ask the students to help the boy by colouring the container which they think would hold more in each pair. Discuss these estimates once the students have completed the page.

Which holds more?



Guess which holds more. Colour to show your guess.

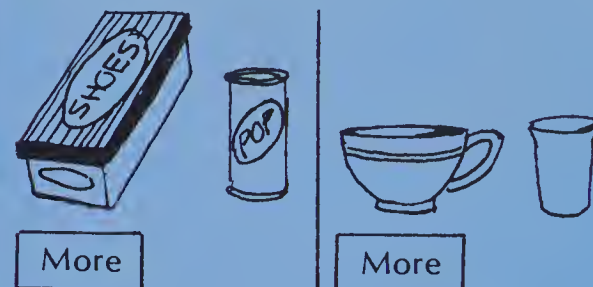


208 two hundred eight

Capacity

Reinforcement

1. Provide students with a variety of pairs of containers and cards marked **More**. Have students compare each pair of containers and place the **More** card by the containers they think hold more. Then have the students check their estimates with rice.



2. Provide pairs of students with a variety of containers and ask them to order the containers from *holds most* to *holds least*. Have the students use rice to check their ordering.



Enrichment

From a set of containers of various sizes, ask the students to find pairs of containers that hold almost the same amount.

Extra Practice

Guess which holds less.
Colour to show your guess.



Worksheet M8

Pages 207-208

UNIT 11 LESSON 5

Objective M9

Determine equivalent capacities.

Vocabulary

Full, empty, half, litre, half litre

Materials

Containers of various sizes

Water, rice, or sand

Litre milk cartons

Crayons

Introducing the Lesson

Display several pairs of a small and a large container. Ask the students how many of the small containers they think it would take to fill the large container. Record these guesses and check using water, rice, or sand. Repeat with other pairs of containers. Emphasize the equivalence of the repeated small units in relation to the large unit.

Teaching the Lesson

Reverse the above process by filling one of the larger containers and asking how many paper cups the students think can be filled by it. Record the estimates and pour to check. Repeat with other containers of various shapes.

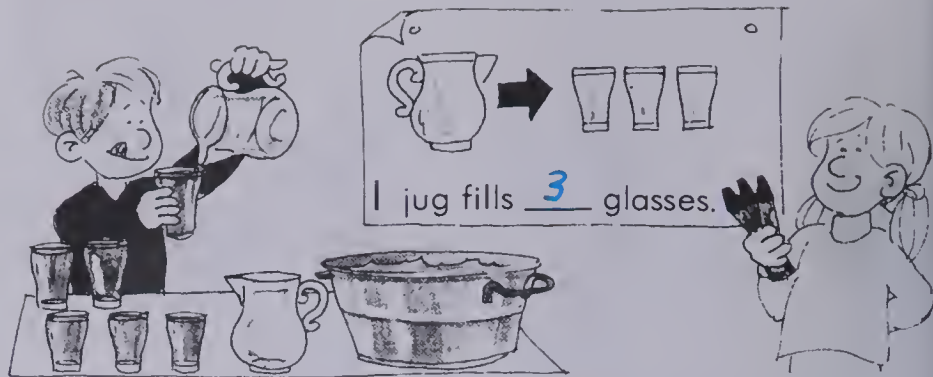
Show students a 1 L milk carton. You may want to show how 1 L contains enough milk for five or six to have a glass full.

Cut a 1 L carton in half to form two half-litre containers. Have some students fill the two half-litre containers with rice and show how they fill a one-litre container.

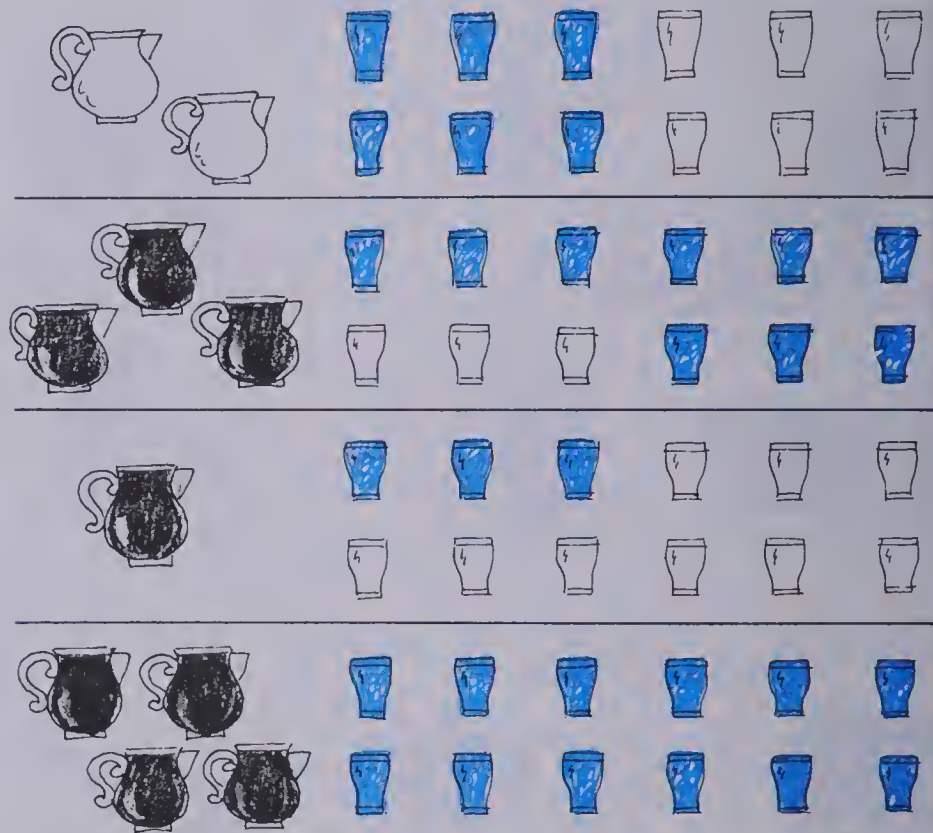


Show the students 4 half-litre cartons and have them guess how many litre cartons they will fill. Have some students fill the 4 half-litre cartons to find the answer.

Show students 6 or 8 half-litre cartons and ask them to guess how many litre cartons they will fill. Ask other students to check the answer.



How many can be filled? Colour.

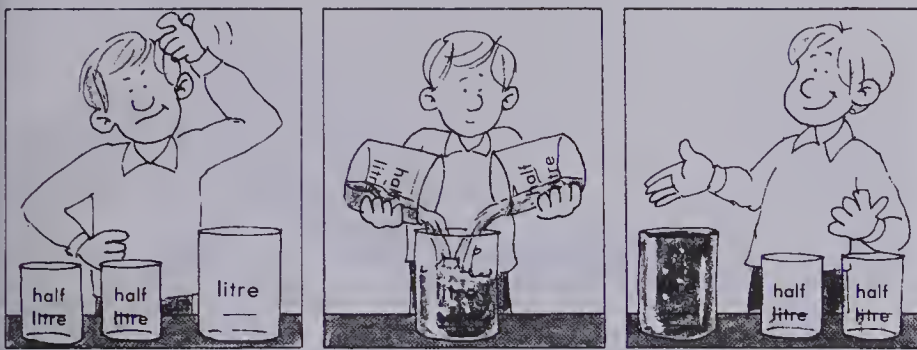


Capacity

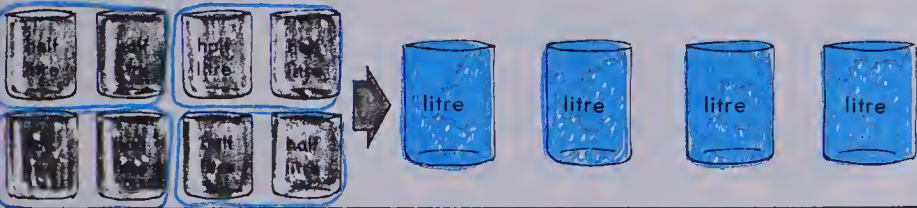
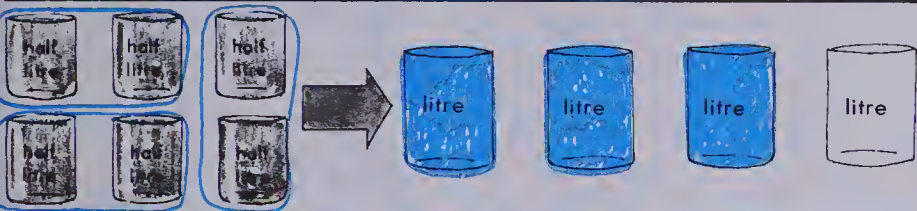
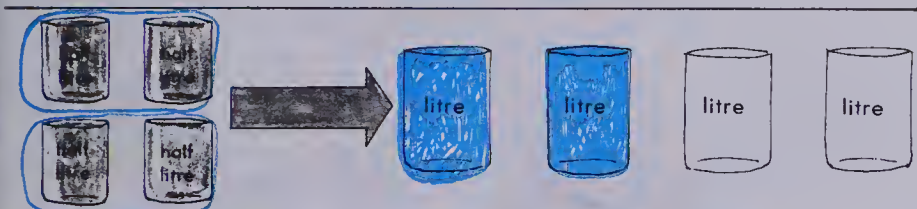
two hundred nine 209

Using the Pages

- Discuss the illustration at the top of page 209. "What does the chart on the wall tell us? What is the boy in the picture doing?" To simplify the page, have the students circle the glasses that each jug will fill and then colour the circled glasses.
- Discuss the illustration at the top of page 210. "What is the boy thinking in the first picture? What is happening in the second picture? What does the third picture tell us?" To complete the exercise, the students are to look at the half litres on the left and circle them in pairs to find how many litres to colour at the right. (Note: This page does not require that the students recognize the units of litre and half litre. If this vocabulary is too difficult, refer to the containers as being small and large.)



How many  can be filled? Colour.

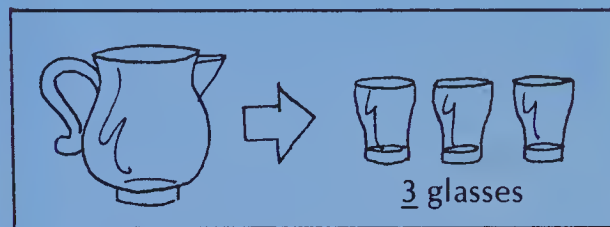








210 two hundred ten

Capacity

Reinforcement

1. Provide pairs of a small and a large container and water, sand, or rice for the students to count how many of the small containers fill the large container.
2. Show the following relationship between the pitcher and the glasses. Then ask the students to fill in the blanks.



- a.  \longrightarrow ___ glasses
- b.   \longrightarrow ___ glasses
- c.    \longrightarrow ___ glasses

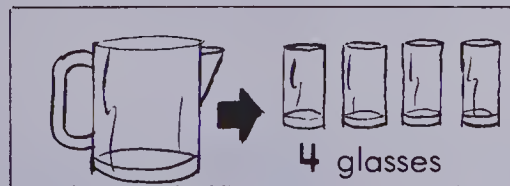
Enrichment

Provide several 1 L milk cartons. Have the students generate statements similar to the following by experimenting with the cartons. *3 half-litre cartons fill one and a half litres.*

Extra Practice

Worksheet M9

Pages 209-210



How many can be filled? Colour.



UNIT 11 LESSON 6

Objective M10

Compare masses to determine the heavier or lighter object.

Vocabulary

Heavy, heavier, light, lighter, balance, mass

Direction words: Which is heavier?
Which is lighter?

Materials

Variety of objects
Pan balance
Pennies

Introducing the Lesson

Display ten to fifteen objects of various masses. Hold up pairs of objects and then ask the students to guess which ones are heavier, lighter, or about the same. Have the students come up, in turn, and compare the two objects. Use a pan balance to check the original guess. (You might want to relate the pan balance to a see-saw.)

Teaching the Lesson

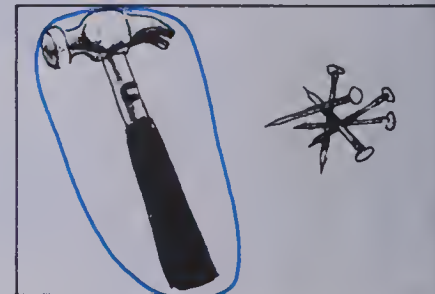
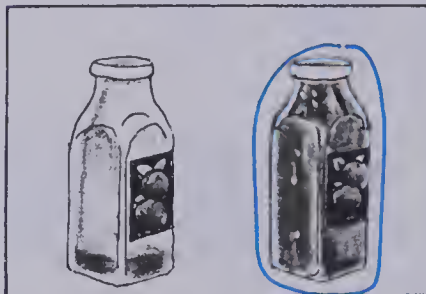
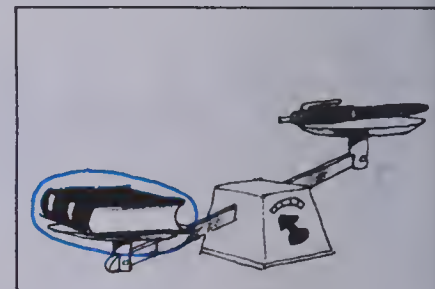
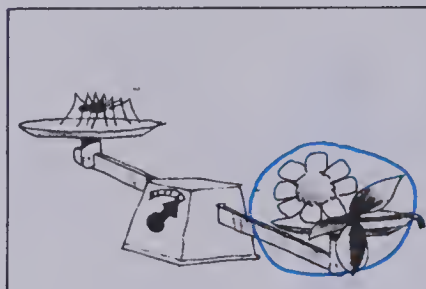
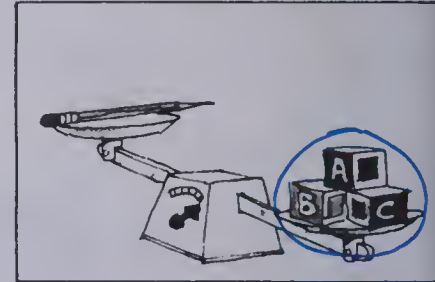
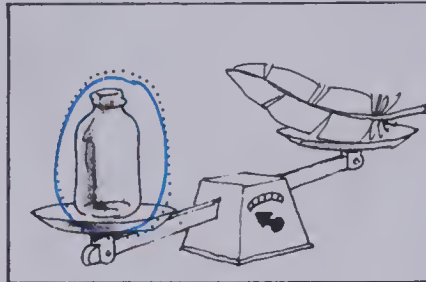
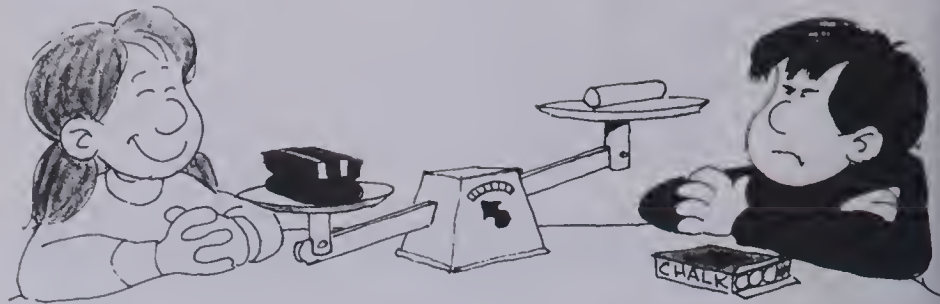
Ask the students to come up, choose two objects, compare their masses by touch, and then hold the objects as though their hands were scales. The lighter object is to be held higher. Have them describe the masses of the two objects by using the terms "heavier" and "lighter". Check the guesses with a pan balance.

Draw the following figure and chart on the chalkboard. Have the students suggest objects that are heavier and lighter than themselves.

Lighter		Heavier
coat		horse
book		house

Use a set of pennies as units of mass. Place one light object on a pan balance. Ask how many blocks it would take to balance the two sides. Check by balancing with the pennies. Repeat.

Which is heavier?



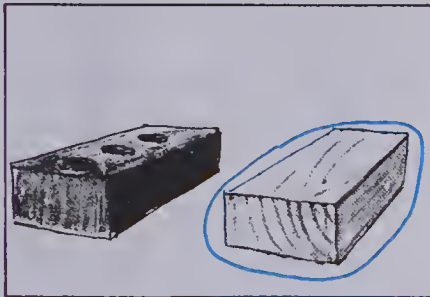
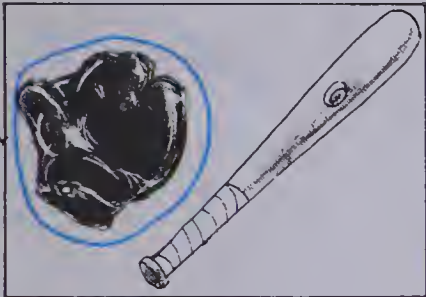
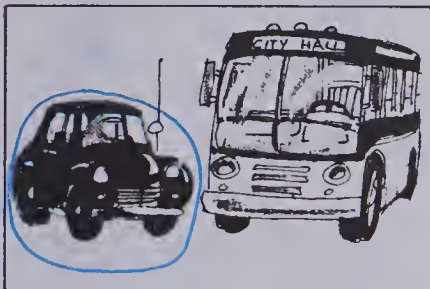
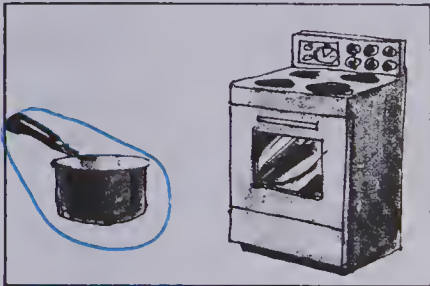
Mass

two hundred eleven 211

Using the Pages

- Discuss the illustration at the top of page 211. Then explain that the students are to look at each pair of objects and circle the heavier one.
- Point out the illustration at the top of page 212. "How do we know the cup is lighter than the phone? Which way is the red arrow pointing?" Explain that the **lighter** object in each pair of objects on the page must be circled.

Which is lighter?

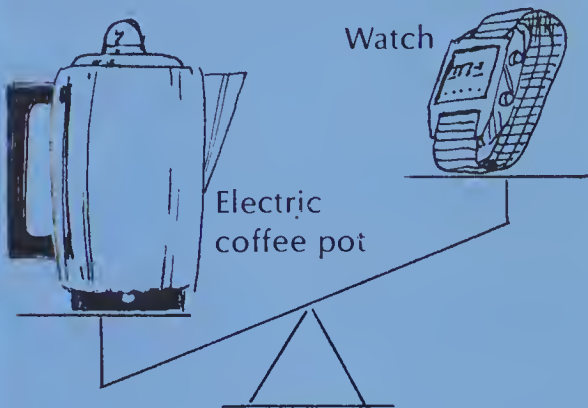


212 two hundred twelve

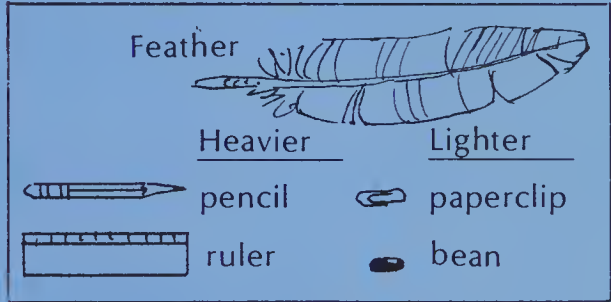
Mass

Reinforcement

1. Give each student a sheet of paper with a simple balance sketched on it. Ask the students to look through catalogs, cut out pictures, and paste them on the balances to show a realistic comparison of their masses.



2. Provide a pan balance, a set of objects, and one special object to be compared with these items. Give the students a placemat or worksheet. Have the students compare each object to the special object on the appropriate side of the placemat. Results can also be recorded on a worksheet.

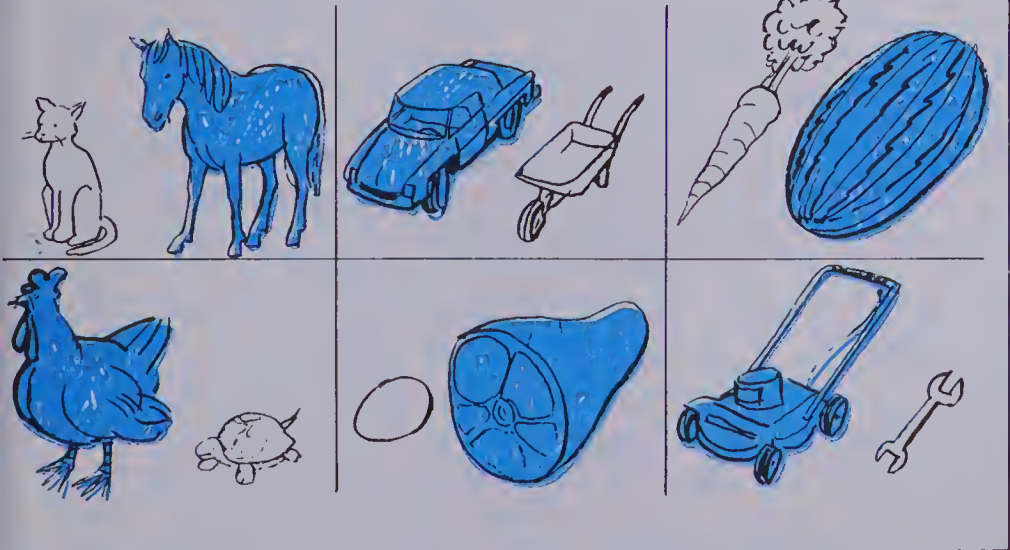


Enrichment

Ask a student to select an object and then select some cubes that would have about the same mass as the object. These estimates can then be checked with a pan balance.

Extra Practice

Which is heavier?



Worksheet M10

Pages 211-212

UNIT 11 LESSON 7

Objective M11

Mark simple temperature readings.

Vocabulary

Thermometer, temperature, degrees Celsius, hot, cold, warm

Materials

Thermometers

Jars

Water

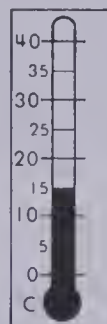
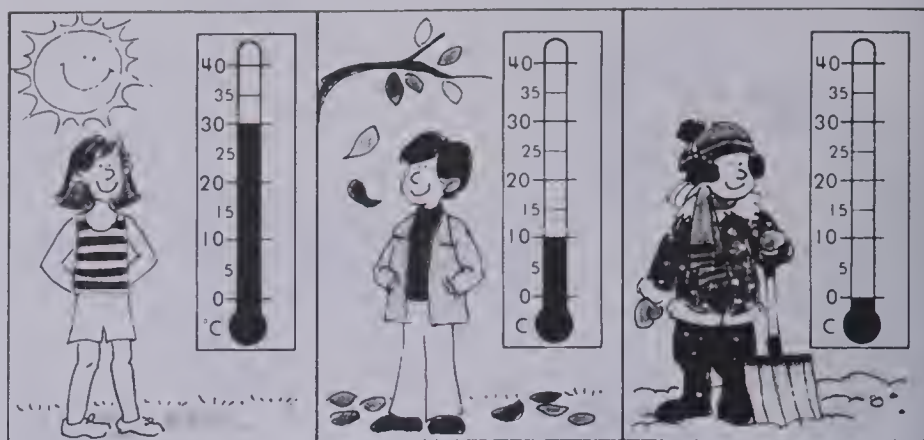
Introducing the Lesson

Show the students a thermometer and ask them what it is. Have them name people or places that use thermometers (doctors, nurses, cooks, weather forecasters, etc.). Ask them whether they have thermometers at home. Ask them to think about whether we need a thermometer to know when it is hot or cold.

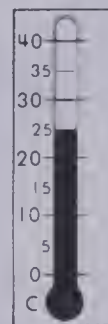
Teaching the Lesson

Place four jars on a table with ice water in one, cold water in the next, warm water in the next, and very warm water in the last. Ask the students to study the jars of water. Ask, "Can we learn about the temperature (hotness/coldness) of the water by looking?" Yes. Ask, "What is another way we can tell if the water is hot or cold?" *By touching it.* Ask each student to come up and carefully touch the outside of each jar. **Caution: Make sure the hot water is not too hot.**

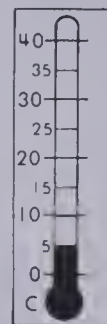
Show the students a thermometer. Sketch a simple thermometer on the chalkboard and mark it in units of 5° . Ask the students to count by 5s and then to look at the red liquid in the thermometer. Ask, "What number is the top of the red liquid touching?" Record this temperature on the chalkboard thermometer. Sketch four more thermometers. Place a real thermometer in the ice, cold, warm, and very warm water. Have the students watch the red liquid. Ask, "What is happening?" Take a reading and record it on the chalkboard thermometer.



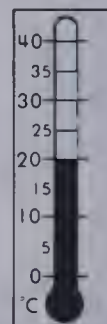
15°C



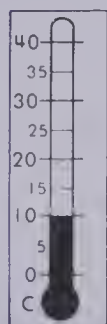
25°C



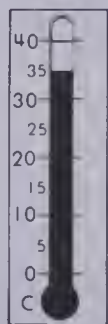
5°C



20°C



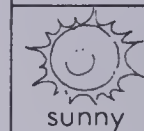
10°C



35°C

Temperature

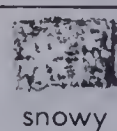
Today is _____°C outside.
The weather is:



sunny



rainy



snowy



cloudy



foggy





windy



ANSWER VARIES
two hundred thirteen 213

Using the Pages

- Discuss in detail each of the three temperature illustrations at the top of page 213. Note the three seasons and the corresponding temperatures shown. For each thermometer shown, the students are to print the temperature reading. Discuss, also, the temperature today so the statement at the bottom right corner of the page can be completed.
- Discuss the typical temperatures for the four seasons illustrated on page 214. The exercises on the page provide a review of the addition and subtraction facts to 12.

Add or subtract.

 <div style="display: flex; justify-content: space-around;"> <div> $\begin{array}{r} 6 \\ + 4 \\ \hline 10 \end{array}$ $\begin{array}{r} 5 \\ + 6 \\ \hline 11 \end{array}$ $\begin{array}{r} 4 \\ + 7 \\ \hline 11 \end{array}$ </div> <div> $\begin{array}{r} 9 \\ + 3 \\ \hline 12 \end{array}$ $\begin{array}{r} 8 \\ + 2 \\ \hline 10 \end{array}$ $\begin{array}{r} 7 \\ + 5 \\ \hline 12 \end{array}$ </div> <div> $\begin{array}{r} 6 \\ + 3 \\ \hline 9 \end{array}$ </div> </div>	 <div style="display: flex; justify-content: space-around;"> <div> $\begin{array}{r} 10 \\ - 5 \\ \hline 5 \end{array}$ $\begin{array}{r} 9 \\ - 4 \\ \hline 5 \end{array}$ $\begin{array}{r} 12 \\ - 3 \\ \hline 9 \end{array}$ </div> <div> $\begin{array}{r} 12 \\ - 8 \\ \hline 4 \end{array}$ $\begin{array}{r} 11 \\ - 7 \\ \hline 4 \end{array}$ $\begin{array}{r} 10 \\ - 3 \\ \hline 7 \end{array}$ </div> <div> $\begin{array}{r} 11 \\ - 5 \\ \hline 6 \end{array}$ </div> </div>
my score 	my score

 <div style="display: flex; justify-content: space-around;"> <div> $\begin{array}{r} 7 \\ + 3 \\ \hline 10 \end{array}$ $\begin{array}{r} 12 \\ - 4 \\ \hline 8 \end{array}$ $\begin{array}{r} 10 \\ - 8 \\ \hline 2 \end{array}$ </div> <div> $\begin{array}{r} 11 \\ - 8 \\ \hline 3 \end{array}$ $\begin{array}{r} 3 \\ + 6 \\ \hline 9 \end{array}$ $\begin{array}{r} 8 \\ + 3 \\ \hline 11 \end{array}$ </div> <div> $\begin{array}{r} 10 \\ - 9 \\ \hline 1 \end{array}$ </div> </div>	 <div style="display: flex; justify-content: space-around;"> <div> $\begin{array}{r} 10 \\ - 5 \\ \hline 5 \end{array}$ $\begin{array}{r} 6 \\ + 6 \\ \hline 12 \end{array}$ $\begin{array}{r} 8 \\ + 4 \\ \hline 12 \end{array}$ </div> <div> $\begin{array}{r} 9 \\ + 1 \\ \hline 10 \end{array}$ $\begin{array}{r} 12 \\ - 6 \\ \hline 6 \end{array}$ $\begin{array}{r} 11 \\ - 6 \\ \hline 5 \end{array}$ </div> <div> $\begin{array}{r} 5 \\ + 5 \\ \hline 10 \end{array}$ </div> </div>
my score 	my score

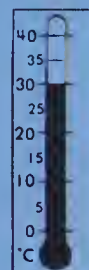
214 two hundred fourteen

Addition and subtraction to 12

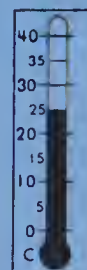
Reinforcement

1. On the chalkboard, keep a record of the temperatures daily for a week.
2. Provide a chalkboard or worksheet exercise in which the students must match thermometers having various readings to the words "hot", "warm", "cool", and "cold".

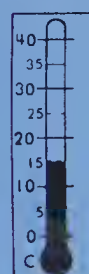
Hot



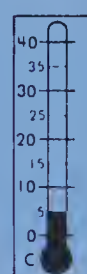
Warm



Cool



Cold

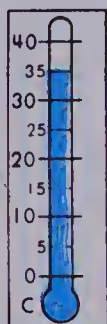


Enrichment

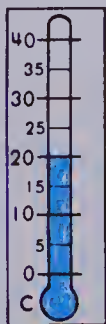
Provide the students with magazines or catalogs. Have them cut out pictures of items suggesting temperature and sort them as cold, warm, or hot on a large poster.

Extra Practice

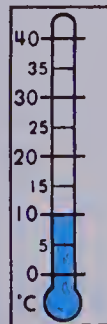
Colour in the temperature.



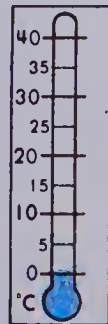
35°C



20°C



10°C



0°C

Worksheet M11

Pages 213-214

UNIT 11 LESSON 8

Objective M12

Cover a surface with squares (informally find area).

Vocabulary

Cover, squares

Direction words: How many squares will cover each figure?

Materials

Deck of cards

Pennies

Graph paper

Crayons

Introducing the Lesson

Use a deck of cards to develop the idea of covering a surface to determine area. Ask, "How many cards do you think it would take to cover this book?" Record their guesses and then check by covering the book with cards. Discuss what to do about leftover edges. Repeat this process using a desk top, a sheet of paper, etc. Show that some shapes are better than others for covering a surface by using a set of pennies to cover a book. Discuss the leftover spaces.

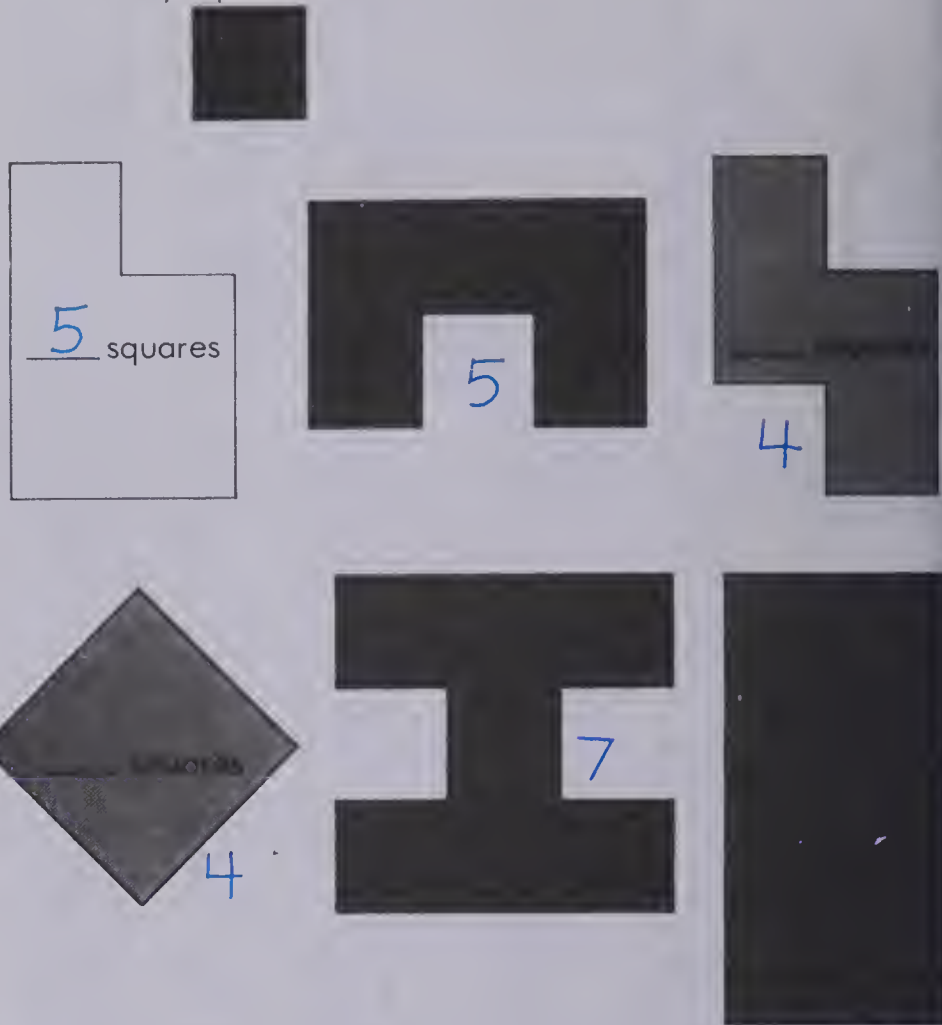
Teaching the Lesson

Provide a piece of graph paper, crayons, and a pencil for each student. Ask the students to trace one hand (fingers closed) onto the graph paper. Next have them colour in the squares that are *almost* completely covered by their hand. Discuss what to do with partially covered squares. Have the students count and record how many squares there are in the area covered by their hand.

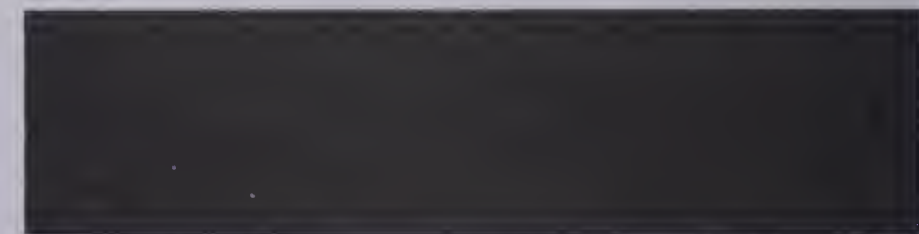
Have the students colour squares on the graph paper to make the letter T. Then have them count how many squares they used. Repeat for C, F, E, and H.

Have the students colour a square shape on the graph paper and then count how many small squares cover it.

How many squares will cover each figure?



Cut out the squares.



Area

two hundred fifteen 215

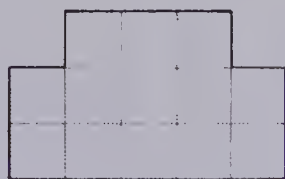
Using the Pages

- For page 215, the students are to first cut out the red squares at the bottom of the page and then fit them over the various shapes to see how many red squares it takes to cover the shapes. Encourage the students first to guess how many squares it will take to cover the shapes.
- On page 216, the students are to count the number of squares shown in the first six shapes. The students must estimate how many squares are in the last three shapes since none are shown.

How many ☐ cover each figure?



8 ☐



13 ☐



8 ☐



11 ☐



14 ☐



16 ☐

Guess how many.



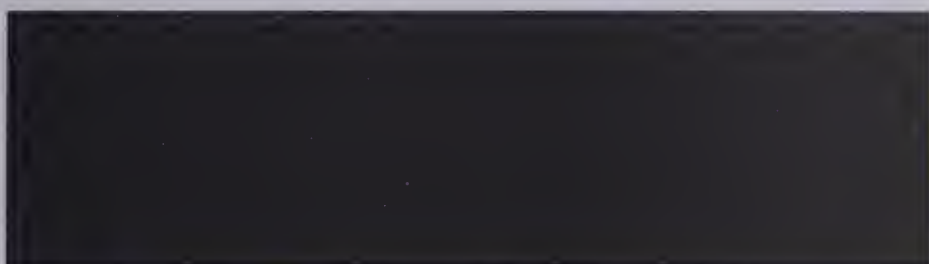
4 ☐



6 ☐



7 ☐



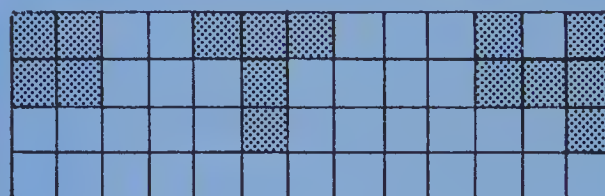
216 two hundred sixteen

Area

Reinforcement

1. Give each student a sheet of graph paper. Have them trace their foot (with a shoe on) on the paper and then count the number of **complete** squares inside the tracing.

2. Provide graph paper. Ask the students to colour a shape having 4 squares, 5 squares, 6 squares, 10 squares, 15 squares, and 21 squares.



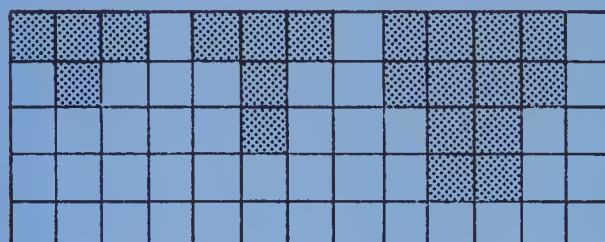
4 squares

5 squares

6 squares

Enrichment

1. Give each student graph paper. Ask them to colour in the letter T using 4 squares, then 5 squares, and then 12 squares.



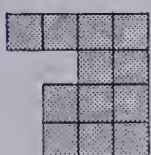
2. Have the students make four different sizes of the letter H and tell how many squares they used for each.

Extra Practice

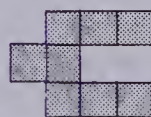
Worksheet M12

Pages 215-216

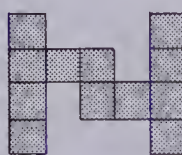
How many ☐ cover each figure?



12 ☐



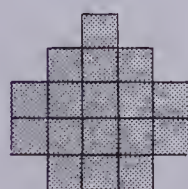
8 ☐



12 ☐



8 ☐



17 ☐



12 ☐

UNIT 11 LESSON 9

Objective A47

Review addition and subtraction facts and word problems with sums to 12.

Vocabulary

Add, subtract, plus, minus, signs

Materials

Sign Cards $+$ and $-$
Dice

Introducing the Lesson

Make up story problems using the students to model the situation.


"Three children are digging a hole on this side of the road. Five children are digging on the other side. How many children are digging?"

Discuss what operation is necessary to find the answer to the question. Invent both addition and subtraction story problems. Record a number sentence to describe each situation. After a few examples, encourage the students to make up the story problems and record the number sentences.

Teaching the Lesson

Give each student a $+$ and $-$ card. Before the students look at the page, read the problems from page 218 to them. After each problem, ask them to show the card that tells what operation should be used. Have a few students come to the chalkboard and write a number sentence to describe each problem.

Teach the students to play an addition/subtraction game using two regular dice. Roll both dice, double the greater number, and subtract the lesser.

 $\rightarrow 5 + 5 = 10 \rightarrow 10 - 2 = 8$

Do several examples orally as a group. Then give the students turns rolling and completing the process aloud.

Add or subtract.



$$\begin{array}{r} 5 \\ + 3 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 10 \\ - 2 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 3 \\ + 6 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 7 \\ - 7 \\ \hline 0 \end{array}$$

$$\begin{array}{r} 6 \\ + 5 \\ \hline 11 \end{array}$$

$$\begin{array}{r} 8 \\ + 2 \\ \hline 10 \end{array}$$

$$\begin{array}{r} 11 \\ - 7 \\ \hline 4 \end{array}$$

$$\begin{array}{r} 9 \\ - 0 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 8 \\ - 3 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 10 \\ - 6 \\ \hline 4 \end{array}$$



$$\begin{array}{r} 8 \\ + 3 \\ \hline 11 \end{array}$$

$$\begin{array}{r} 4 \\ + 6 \\ \hline 10 \end{array}$$

$$\begin{array}{r} 12 \\ - 9 \\ \hline 3 \end{array}$$

$$\begin{array}{r} 4 \\ + 5 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 9 \\ - 4 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 8 \\ - 7 \\ \hline 1 \end{array}$$

$$\begin{array}{r} 6 \\ + 2 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 7 \\ + 5 \\ \hline 12 \end{array}$$



$$\begin{array}{r} 7 \\ + 3 \\ \hline 10 \end{array}$$

$$\begin{array}{r} 8 \\ + 4 \\ \hline 12 \end{array}$$

$$\begin{array}{r} 11 \\ - 2 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 9 \\ - 8 \\ \hline 1 \end{array}$$

$$\begin{array}{r} 5 \\ + 5 \\ \hline 10 \end{array}$$

$$\begin{array}{r} 10 \\ - 1 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 4 \\ + 4 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 12 \\ - 6 \\ \hline 6 \end{array}$$

$$\begin{array}{r} 7 \\ + 4 \\ \hline 11 \end{array}$$



Addition and subtraction to 12

two hundred seventeen 217

Using the Pages

- On page 217, have the students make up story problems to go with the facts in the first two rows. As the students complete the sums and differences, check their answers. Then they can complete the remainder of the page at their own speed.
- Depending on the ability of your students, you may want to assign the page as independent work or complete it as an oral, guided lesson.



3 children are in the tree.
6 children are under the tree.
How many children in all?

9 children

$$\begin{array}{r} \oplus \text{ or } - \\ 3 \\ + 6 \\ \hline 9 \end{array}$$

6 children are on the slide.
1 child goes down.
How many children are left?

5 children

$$\begin{array}{r} + \text{ or } \ominus \\ 6 \\ - 1 \\ \hline 5 \end{array}$$

4 children are on the swings.
1 child goes home.
How many children are left?

3 children

$$\begin{array}{r} + \text{ or } \ominus \\ 4 \\ - 1 \\ \hline 3 \end{array}$$

4 children are on the monkey bars.
3 children are under the bars.
How many children in all?

7 children

$$\begin{array}{r} \oplus \text{ or } - \\ 4 \\ + 3 \\ \hline 7 \end{array}$$

218 two hundred eighteen

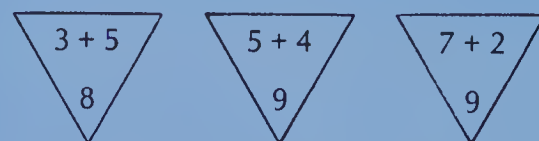
Problem solving

Reinforcement

1. Provide a chalkboard exercise of these mixed addition and subtraction examples.

$$\begin{array}{ll} 6 + 5 = \square & 9 - 3 = \square \\ 12 - 5 = \square & 9 + 3 = \square \\ 5 + 5 = \square & 10 - 4 = \square \\ 4 + 7 = \square & 11 - 3 = \square \\ 11 - 6 = \square & 3 + 7 = \square \\ 6 + 6 = \square & 4 + 5 = \square \\ 10 - 2 = \square & 12 - 8 = \square \end{array}$$

2. Make up triangle flash cards.



Hold the flash card at the bottom so that the answer is covered. The students' task is to find the covered number. This activity can be done with teachers and students or between students. It is often more effective if each student has numeral cards from 0 to 12 and they give the answer by holding up a card. This way you can monitor the students' responses.

Enrichment

Play the addition/subtraction game mentioned in Teaching the Lesson, but have the students work silently. The first to get the answer rolls the dice the next time.

Extra Practice

Worksheet A47

Pages 217-218

Add or subtract.

$$8 + 2 = \underline{10} \quad 12 - 5 = \underline{7} \quad 6 + 2 = \underline{8}$$

$$10 - 3 = \underline{7} \quad 9 + 1 = \underline{10} \quad 8 - 4 = \underline{4}$$

$$11 - 5 = \underline{6} \quad 12 - 8 = \underline{4} \quad 3 + 9 = \underline{12}$$

$$6 + 6 = \underline{12} \quad 7 + 4 = \underline{11} \quad 9 - 5 = \underline{4}$$

$$5 - 5 = \underline{0} \quad 3 + 6 = \underline{9} \quad 11 - 8 = \underline{3}$$

Problem Solving Activities

Assign Level 1, Unit 11

UNIT 11 LESSON 10

Objective PS7

Solve addition and subtraction word problems involving money.

Vocabulary

Get, spend, in all, left

Materials

Pennies

Introducing the Lesson

Give each student a piece of paper and some pennies. Have the students draw a large piggy bank on the paper. Give oral word problems involving saving and spending pennies using the bank.

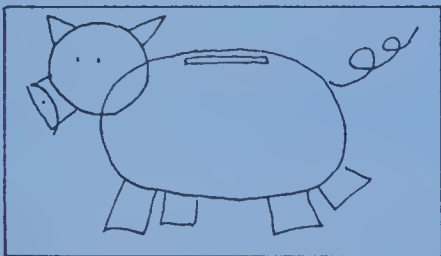
"You have 5¢."

(Put 5 pennies on your bank.)

"You get 3¢."

(Add 3 more pennies onto your bank.)

"How much have you saved in all?"



"You have 8¢ in your bank."

(Put 8 pennies on your bank.)

"You spend 4¢."

(Take 4 pennies off your bank.)

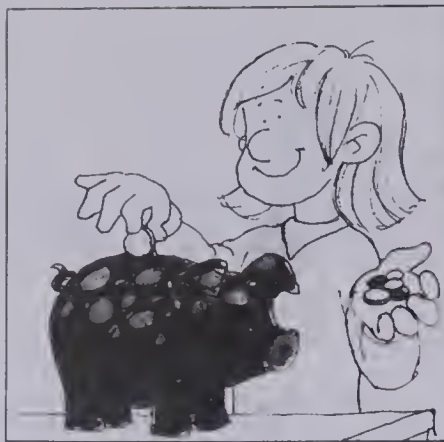
"How much money is left in your bank?"

Teaching the Lesson

Have several students work at the chalkboard while the others use pennies and banks. Give each one a chance to make up a spending or saving problem. Compare the number sentences on the chalkboard with the arrangements of pennies on the piggy bank mats.

Review the symbol for cents ¢. Students need not use the cents sign when computing, but should include it in the summary statement, e.g., "How much is left?" *Three cents (3¢).*

Emphasize enrichment and extension activities. Extend the measurement and geometry topics included in this unit.



$$\begin{array}{r} \text{Have } 6¢ \\ \text{Get } 5¢ \\ \hline \text{How much in all? } 11¢ \end{array}$$

$$\begin{array}{r} \text{Have } 5¢ \\ \text{Get } 4¢ \\ \hline \text{How much in all? } 9¢ \end{array}$$

$$\begin{array}{r} \text{Have } 7¢ \\ \text{Get } 3¢ \\ \hline \text{How much in all? } 10¢ \end{array}$$

$$\begin{array}{r} \text{Have } 9¢ \\ \text{Get } 2¢ \\ \hline \text{How much in all? } 11¢ \end{array}$$



$$\begin{array}{r} \text{Have } 10¢ \\ \text{Spend } 3¢ \\ \hline \text{How much is left? } 7¢ \end{array}$$

$$\begin{array}{r} \text{Have } 8¢ \\ \text{Spend } 4¢ \\ \hline \text{How much is left? } 4¢ \end{array}$$

$$\begin{array}{r} \text{Have } 9¢ \\ \text{Spend } 5¢ \\ \hline \text{How much is left? } 4¢ \end{array}$$

$$\begin{array}{r} \text{Have } 10¢ \\ \text{Spend } 8¢ \\ \hline \text{How much is left? } 2¢ \end{array}$$

Problem solving

two hundred nineteen 219

Using the Page

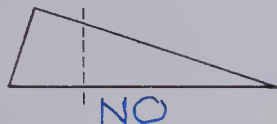
- Ask the students to look at the pictures at the top of page 219. Have them think of a short story about the pictures. Before answering the questions on the page, the students can act them out with pennies.

Reinforcement

Provide piggy bank mats, pennies, and a worksheet of money examples to model and compute.

$\begin{array}{r} 3¢ \\ +4¢ \\ \hline \end{array}$	$\begin{array}{r} 9¢ \\ -2¢ \\ \hline \end{array}$	$\begin{array}{r} 5¢ \\ +4¢ \\ \hline \end{array}$	$\begin{array}{r} 6¢ \\ +5¢ \\ \hline \end{array}$
$\begin{array}{r} 10¢ \\ -4¢ \\ \hline \end{array}$	$\begin{array}{r} 8¢ \\ -3¢ \\ \hline \end{array}$	$\begin{array}{r} 12¢ \\ -6¢ \\ \hline \end{array}$	$\begin{array}{r} 11¢ \\ -4¢ \\ \hline \end{array}$

Which pictures will match if folded?



Colour.

one half



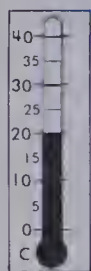
one fourth



Which holds more?

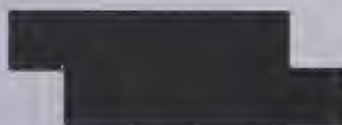


Which is heavier?



20°C

How many ☐ cover the figure?



10 ☐

Add or subtract.

$$\begin{array}{r} 6 \\ + 6 \\ \hline 12 \end{array} \quad \begin{array}{r} 11 \\ - 4 \\ \hline 7 \end{array} \quad \begin{array}{r} 5 \\ + 6 \\ \hline 11 \end{array} \quad \begin{array}{r} 12 \\ - 3 \\ \hline 9 \end{array} \quad \begin{array}{r} 10 \\ - 8 \\ \hline 2 \end{array} \quad \begin{array}{r} 7 \\ + 5 \\ \hline 12 \end{array}$$

Have 9¢
Spend 4¢
How much is left?
5¢

Have 6¢
Get 5¢
How much in all?
11¢

220 two hundred twenty

Unit 11 test

UNIT 11

TEST

- Part 1: Identify symmetrical shapes.
Part 2: Recognize one half and one fourth.
Part 3: Estimate and compare capacities and masses.
Part 4: Read thermometer markings.
Part 5: Informally find areas.
Part 6: Add or subtract facts and word problems to 12.

Informal Assessment

1. Recognize symmetrical shapes. Provide several shapes cut from card. Ask the student to sort these into shapes that match when folded and shapes that do not match. This can also be done using a worksheet of shapes for a student to cut out, fold, and sort.
2. Recognize one half and one fourth. Ask the student to identify objects, e.g., fruits, which are cut into equal parts, in half, or in fourths. Ask the student to name parts as you identify them. *That is half of the apple.*
3. Estimate the heavier or lighter of two objects.
4. Estimate the container with the greater capacity. Since this unit provides only an informal introduction to ideas involving mass and capacity, observe the student as he or she works with materials and begins to make predictions and estimates involving mass and capacity. This should provide you with some idea of each student's growing awareness of measurement concepts.
5. Read a thermometer in degrees Celsius. Provide a real thermometer with reasonably large markings for easy reading. Ask the student to read this and colour in the temperature on a blank worksheet thermometer.
6. Estimate area with square units. Observe the student as he or she works with activities, such as those on pages 215 and 216 of Lesson 8. See if the pupil understands the idea of covering an area with units to estimate or measure that area.
7. Add or subtract mixed examples to sums of 12. Use a set of flash cards to check each student individually. Look for the following types of responses.
 - a. "wild guess"
 - b. counting
 - c. thinking
 - d. recalling

UNIT 12

Counting

Theme: At the Fair

Lesson		Objective	Pages
1	N39	Count by ones to 100.	221-222
2	N40	Count by tens to 100.	223-224
3	M13	Count dimes and pennies.	225-226
4	N41	Count by fives to 50.	227-228
5	M14	Count nickels and pennies.	229-230
6	N42	Count by twos to 20.	231-232
7	A46	Prepare for multiplication.	233-234
8	A47	Introduce the multiplication sign.	235-236
9	M15	Count with the quarter.	237-238
10	PS8	Buy objects to \$1.00.	239
Test		Money and counting.	240

Vocabulary

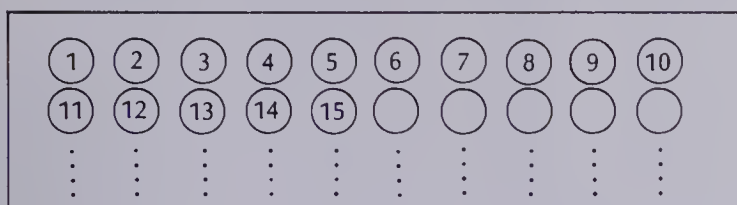
count forward	count by fives
count backwards	nickel
tenth	whisper count
hundred chart	count by twos
next	groups of
before/after	How many groups?
one more/one less	How many in each group?
two more/two less	multiply
count by tens	times
count on by ones	multiplication sentence
dimes	greater
pennies	twenty-five cents
cents	bought
trading	left

Printed Directions:

Uncork the numbers.
 How much money?
 Keep counting.
 Put an X on enough money.
 Multiply. Draw the missing groups.

Materials

Hundred chart (or board) with removable cards (or discs) labelled with the numbers from 1 to 100.



Price tag cards to \$1.00

dimes

pennies

nickels

quarters

small containers

magnetic counters

classroom objects

hula hoops

counters

blank dice

About This Unit

Unit 12 reinforces the counting skills developed in previous units and extends these skills to include counting by twos to 20. The hundred chart is used extensively in consolidating these counting skills. Further practice in counting on by ones, fives, and tens is provided with coins (pennies, nickels, and dimes) pictured in a variety of combinations.

Lessons 7 and 8 of this unit are devoted to introducing the concept of multiplication. The emphasis in both lessons is the development of the meaning of multiplication in conjunction with the known operation of addition. Real-life situations with concrete materials and pictures are used to identify and translate the addition sentence ($2 + 2 + 2 = 6$) into the pre-multiplication sentences ($3 \text{ groups of } 2 = 6$ and $3 \text{ twos} = 6$), leading to the multiplication sentence with the accompanying symbol $3 \times 2 = 6$. The memorization of the multiplication facts to 20 is not an objective in the Grade 1 *Houghton Mifflin Mathematics* program. The stress is on readiness for multiplication.

The last two lessons in the unit introduce the quarter and incorporate this coin into the counting skills from the earlier lessons. Only one quarter is expected to be counted in a given situation.

Ideas

The theme of Unit 12 is *At the Fair*. Creating a fair atmosphere in the classroom would be particularly appropriate in the last month of school when summer holidays are just around the corner and the numerous fairs across the country are in the last stages of preparation. Below are summarized the thematic subjects of each lesson with suggestions for practice and possible extensions.

Lesson 1

Uncork the Number Game, Seal Juggling Act - Dot-to-Dot.

Simulate the cork game on page 221 by numbering used corks from 1 to 100. The winner is the person to place all 100 corks in a row. Discuss the circus and the other acts that may be performed. Bring in books on the circus from the library.

Lesson 2

Pitch and Putt Course, Test Your Strength, Roller Coaster Dot-to-Dot.

Discuss the meaning of pitch and putt. This may lead to a greater discussion of the game of golf. Display golf clubs, balls, etc. Make individual copies of the "Test Your Strength" ladder on page 224.

Have the students "test their strength" in spelling, counting, or adding and subtracting facts to 10.

Lesson 3

Toss the Coin Game, Purchasing Tickets.

Provide paper plates and coins to play "Toss the Coin". The students are to count the coins that land in the plate after three tries.

Lesson 4

Pop the Balloon, Ferris Wheel.

Make a graph of favourite rides. Make a list of words to describe how you feel in several of the rides.

Lesson 5

Strong Man Act, Spending Money at the Fair.
Make a graph of favourite foods eaten at the fair.

Discuss prizes to be won at the various games.
Show and tell about some of them.

Lesson 6

Shoot the Ducks, Clowns.

Display a picture book on clowns. Discuss the clowns' role in the circus.

Lesson 7

Balloons, Cards

Flash a deck of playing cards to develop instant recognition of number patterns to 10. The numbers from 1 to 6 in particular should be recognized immediately to speed up the counting process. The domino number patterns are also useful to develop instant recognition of quantity.

Discuss the four suits in a deck of cards and the face cards.

Lesson 8

Knock the Bottles Game, Fishing Game.

Simulate the milk bottle game with wooden pegs and a rubber ball.

Play the game during gym class.

Lesson 9

Spending Money at the Fair.

Ask the students how they would spend \$1.00 at the fair if the rides are 10¢ each and food costs the same as on page 239. Include other favourite foods. Games also are 10¢ to play.

Name

Unit 12

Count

30	40	50	60	70
----	----	----	----	----

78	79	80	81	82
----	----	----	----	----

How much money?

        	        	        	        	        
64	36	36	36	36

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Had

Had

A simple line drawing of a car, viewed from the side. A price tag is attached to the front of the car, displaying the number 26¢.

Spent

How much is left?

50

How many?

$$2 \text{ fours} = \underline{8}$$
$$5 \text{ twos} = 10$$
$$2 \times 4 = 8$$
$$5 \times 2 = 10$$

Name

Unit 12

Count

10	15	20	25	30
----	----	----	----	----

8	10	12	14	16
---	----	----	----	----

How much money?

A collection of 14 circular stamps, each featuring a different animal and the text "WILDLIFE" and "NATIONAL PARKS". The animals include a variety of birds, a deer, a bear, a moose, a horse, a rabbit, a squirrel, a chipmunk, a chipmunk, a chipmunk, a chipmunk, a chipmunk, a chipmunk, a chipmunk, and a chipmunk.

A collection of 15 circular stamps, each featuring a different animal and the text "WILDLIFE" and "NATIONAL PARKS". The animals include a variety of birds, a deer, a bear, a moose, a horse, a rabbit, a squirrel, a chipmunk, a chipmunk, a chipmunk, a chipmunk, a chipmunk, a chipmunk, a chipmunk, a chipmunk, and a chipmunk.

Had

Had

A simple line drawing of a car, viewed from the side. A speech bubble or price tag is attached to the top of the car, containing the text "\$247".

Spent

How much is left?



How many?

$$2 \text{ fives} = \underline{10}$$
$$4 \text{ threes} = 12$$
$$2 \times 5 = 10$$
$$= \frac{1}{2} \times 3 \times 4$$

UNIT 12 LESSON 1

Objective N39

Count by ones to 100.

Vocabulary

Count forward, count backwards, tenth, hundred chart, next, before/after, one more/one less, two more/two less

Materials

Hundred chart with removable cards (or discs) with the numerals 1-100 printed on them.

Crayons

Introducing the Lesson

Ask the students to close their eyes and count aloud from 1 to 100 in unison. Keep the rhythm by tapping a ruler on a desk.

Teaching the Lesson

Ahead of time, place the cards on the hundred chart similar to the picture on page 221 with the blank side of most of the cards showing. Ask a student to come up, choose a visible number, and read it aloud. The rest of the students are to count forward from that number as the student turns over the cards until the next visible number is reached. Have the students take turns until all the cards show their numbers.

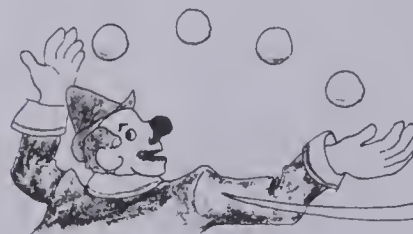
Ask a student to come up to the hundred chart, choose a card, read it, and turn it so its blank side is showing. The rest of the students are to count backwards from that number as the student turns over the cards. Have the students each turn over five cards, until all the cards are blank.

Turn a card in the hundreds chart to its number side and ask a variety of questions like the following.

- “What are the next three numbers?
- What number comes after ...?
- What number comes before ...?
- Count forward three numbers.
- Count backwards three numbers.
- What number is 1 less, 2 less than ...?
- What number is 1 more, 2 more than ...?

(Continued in Reinforcement)

Uncork the numbers.



Colour every tenth number **red**.

Count to 100

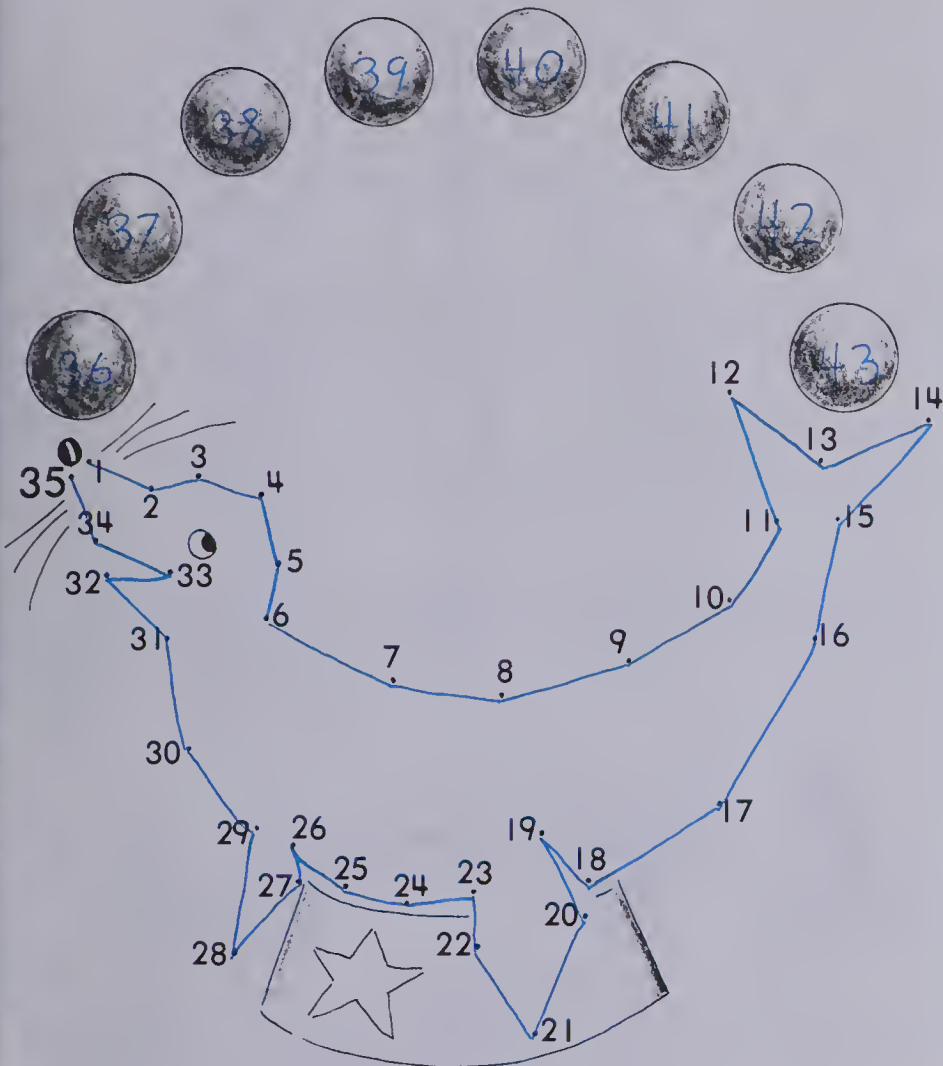
two hundred twenty-one 221


Using the Pages

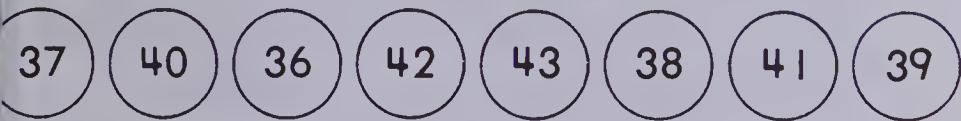
- Page 221 requires the students to fill in the missing numbers from 1 to 100 on the balloon/dart board. As an extra activity, ask the students to colour every tenth number with a red crayon.
- Page 222 is a dot-to-dot activity requiring the students to count backwards from 35 to 1. If the dots are properly joined, a seal emerges. The cut-and-paste activity at the bottom of the page requires the ordering of numbers 36 to 43.

Join the dots.

Count backwards from 35 to 1.



Cut out and paste on the  in order.



222 two hundred twenty-two

Count backwards

Reinforcement

As the questions are answered, turn the appropriate cards over. Continue until all the numbers are showing once again.

Have the students number off from 1 to 10. Ask every tenth student to stand up.

Count on the hundred chart from 1 to 10, turning the cards so their blank sides show, leaving every tenth card alone. Discuss the pattern that the tenth numbers make (vertical or up-and-down line). Read the numbers aloud.

1. Give a number orally and ask a student to give the number after and before it. This can be a class or small group activity. Also, pairs of students can try it. Allow the use of the hundred chart if needed.

2. Ask students to find patterns in the hundred chart. Start off the discussion by saying, "I see a pattern in the up-and-down columns (use "vertical" if the term is familiar) where the same digit is in the ones place." Demonstrate on the chart.

3. Play "Guess How Many". Fill several glass jars with counters, marbles, pennies, or peas (less than 100). The students are to guess how many in each container, then count to check their guess.

Enrichment

Remove all the cards from the hundred chart, mix them up, and place them face down on the table. Ask a student to go up, pick a card, read the number, and place it in its proper position on the chart. If a mistake is made that is not spotted, let it go; it will be found later.

Variation 1: Hand out blank hundred chart worksheets and have the rest of the students fill in their own charts with the number chosen.

Variation 2: Have three to five cards already on the chart to provide clues for positioning. Do this only if the above activity is too difficult.

Extra Practice

Fill in the missing numerals.

Worksheet N39

Pages 221-222

1	2	3	4	5	6	7	8	9	10	11	12	13	14
15	16	17	18	19	20	21	22	23	24	25	26	27	28
29	30	31	32	33	34	35	36	37	38	39	40	41	42
43	44	45	46	47	48	49	50	51	52	53	54	55	56
57	58	59	60	61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80	81	82	83	84
85	86	87	88	89	90	91	92	93	94	95	96	97	98
99	100												

UNIT 12 LESSON 2

Objective N40

Count by tens to 100.

Vocabulary

Count by tens, count on by ones.

Direction words: How much money?

Keep counting.

Materials

Hundred chart from Lesson 1

Pennies

Small containers

Introducing the Lesson

Direct the students to the hundred chart. Review counting on by ones by pointing to the numbers while the students count aloud.

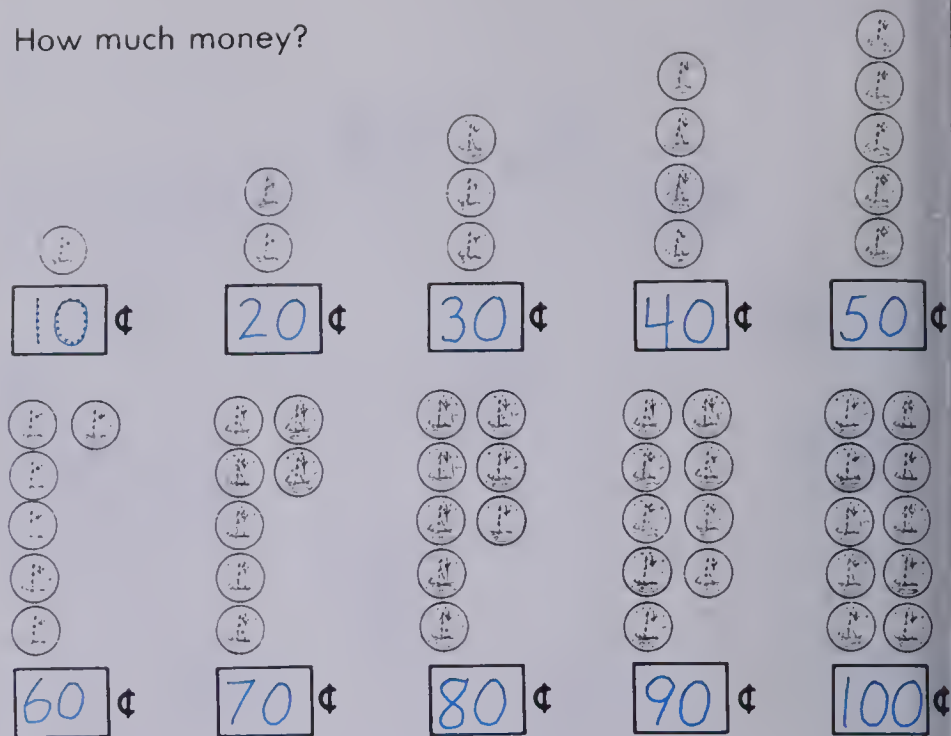
Teaching the Lesson

Count from 1 to 10 using the hundred chart. Turn the cards from 1 to 9 so that their blank sides show and leave every tenth card alone. Explain that counting every tenth number is called counting by tens. Ask students to count by tens to 100. Many students will already be familiar with counting by tens from various units. However, for the few that aren't, this demonstration will be worthwhile.

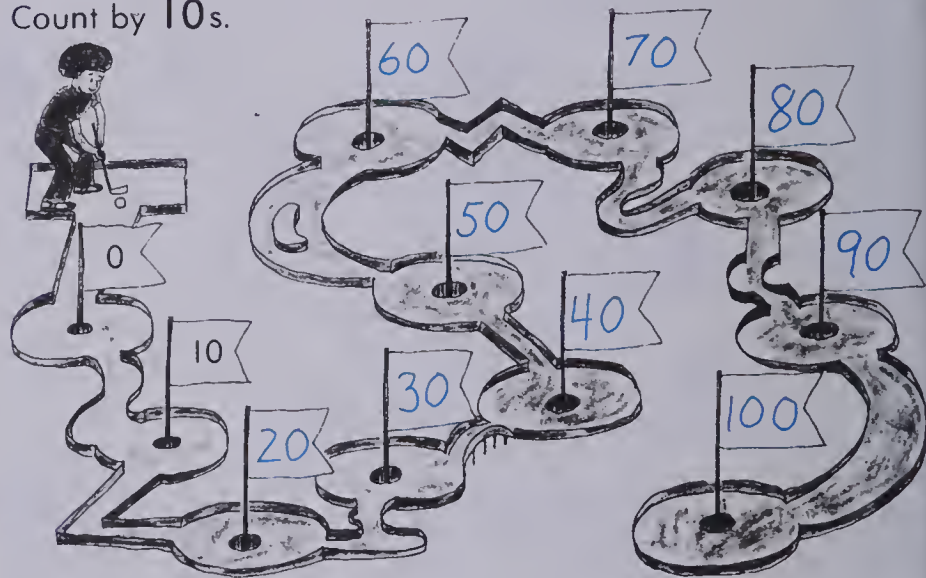
Ask a student to come up and hold up both hands with fingers outstretched. Ask how many fingers in all? 10. Ask another student to come up and do the same. Ask, "How many fingers in all?" 20. Repeat one at a time until 100 fingers have been counted. Encourage counting by tens.

Hold a dime in your right hand. Ask a student to place the correct number of pennies in your left hand to equal a dime. Ask, "How much money for a dime?" 10¢. "How many pennies?" 10. Put another dime in your right hand. Ask another student to add enough pennies to your left hand to equal 2 dimes. Ask, "How much money in the right hand?" 20¢. "Left hand?" 20¢. Continue in this way until 10 dimes are in your right hand. Use a container for the pennies in your left hand.

How much money?



Count by 10s.

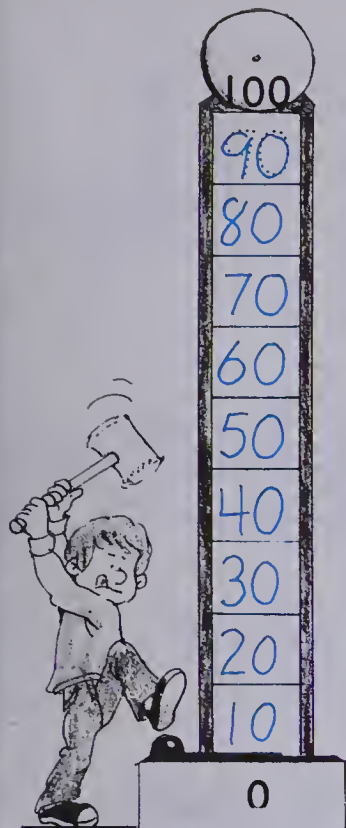


Count by tens

two hundred twenty-three 223

Using the Pages

- Page 223 reinforces the counting by tens sequence to 100. Point out that the starting number in any counting sequence is zero, as shown in the Pitch and Putt course.
- Page 224 provides practice in counting on by ones and tens with a variety of starting numbers. For the dot-to-dot, help the students locate the starting number of zero, as shown by the blue arrow, in joining the dots and counting by tens. The starting number in joining the triangles and counting by ones is 50, as shown by the red arrow.



Keep counting.

20 30 40 50 60 70

60 61 62 63 64 65

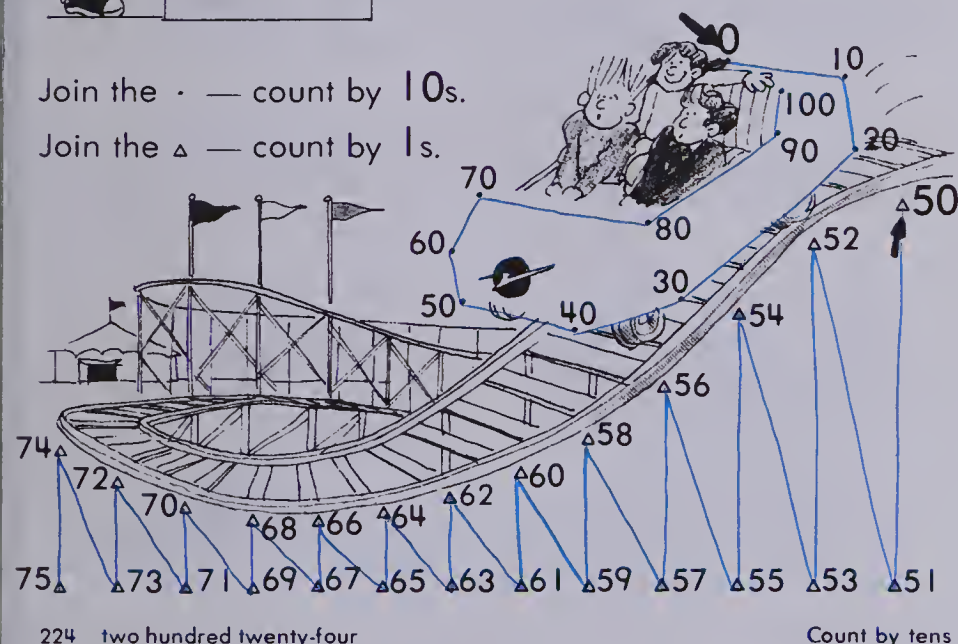
50 60 70 80 90 100

50 40 30 20 10 0

95 96 97 98 99 100

Join the • — count by 10s.

Join the Δ — count by 1s.



224 two hundred twenty-four

Count by tens

Reinforcement

1. Provide the following cards.

0, 10, 20, 30, ..., 100

Shuffle and ask the students to put them in order.

2. See Lesson 1, Reinforcement Activity

3. Play "Guess How Many". In counting the objects, tell the students to arrange the counters in groups of ten to make counting easier.

Enrichment

1. Count all the fingers in the class by tens. Count all the toes in the class by tens.

2. Complete the table below.

100	110	120				160			
200	210			240					
300								380	

3. Complete the patterns. Provide counters if needed.

3, 13, 23, —, —, —

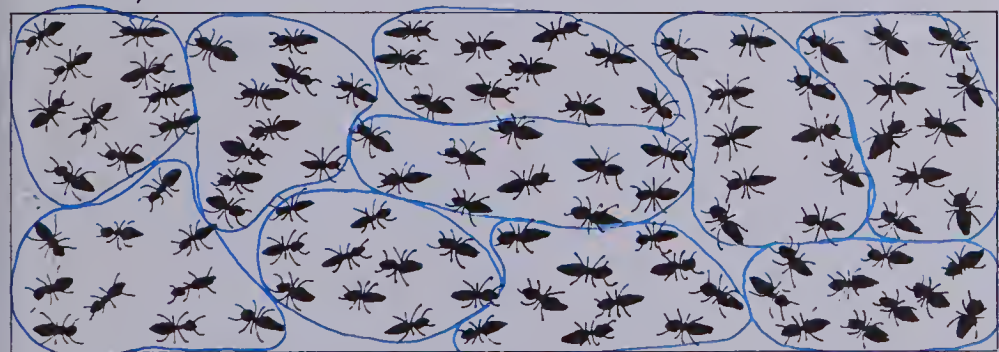
4, 14, 24, —, —, —

5, 15, 25, —, —, —

Extra Practice

Circle groups of ten.

Count by tens.



How many ants in all? 100

Worksheet N40

Pages 223-224

UNIT 12 LESSON 3

Objective M13

Count dimes and pennies.

Vocabulary

Dimes, pennies, cents, trading

Direction words: Put an X on enough money.

Materials

10 dimes per student
20 pennies per student

Introducing the Lesson

Ask the students to close their eyes and count aloud by tens to 100. Show 3 dimes. Ask, "How much money or cents in all?"

Emphasize counting by tens. Repeat with 6 dimes, 1 dime, 8 dimes, and 10 dimes.

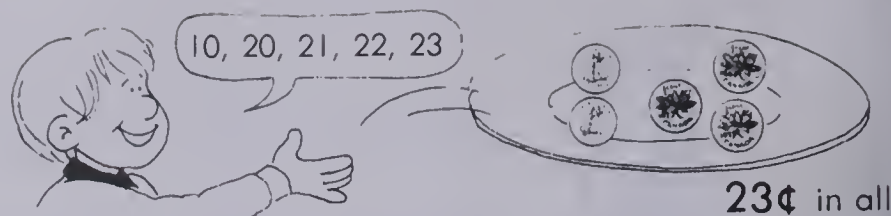
Teaching the Lesson

Give out 10 dimes and 20 pennies to each student. Ask the students to show 10 cents. Accept both 10 pennies and 1 dime. Encourage the trading of 10 pennies for a dime whenever possible, providing the students are convinced they are the same. Repeat with 20¢, 40¢, and 60¢. Ask students to show 21¢ and to count the coins aloud (ten, twenty, twenty-one). Repeat with 31¢, 41¢, 51¢.

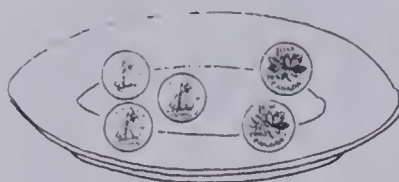
Print 25¢ on the chalkboard. Ask the students to show and count the coins to make this much money. Print 32¢, 58¢, 44¢, and 69¢ on the chalkboard. Ask the students to make and count each amount.

Ask the students to get 1 dime and 2 pennies. "How many cents in all?"

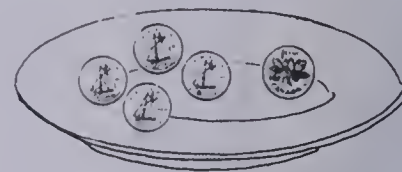
Have a student count aloud (*Ten, eleven, twelve cents*). Repeat with differing amounts of dimes and pennies. Emphasize the symbol for cents (¢) when writing amounts of money.



How much money?



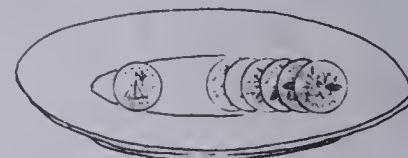
32 ¢



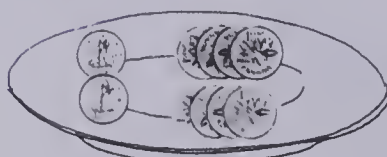
41 ¢



61 ¢



16 ¢



28 ¢



18 ¢

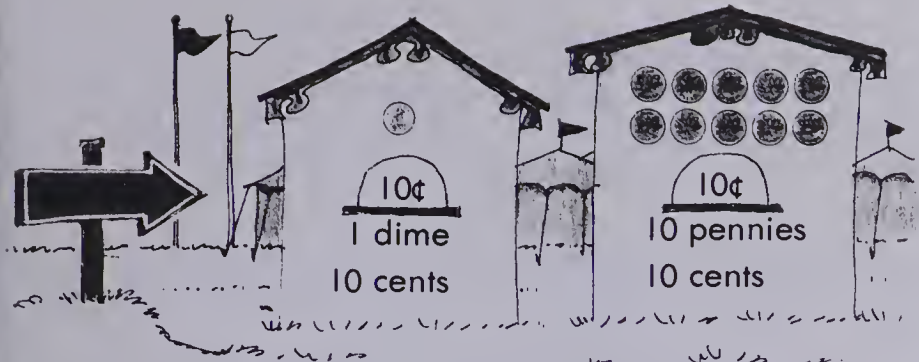
Colour the plate with the most money.

Dimes and pennies

two hundred twenty-five 225

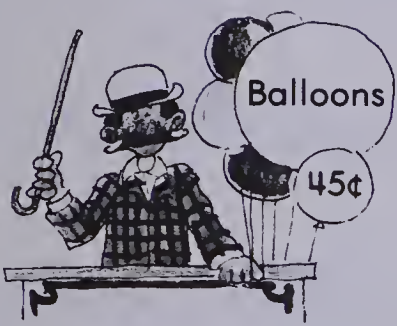
Using the Pages

- Page 225 requires the students to count the dimes and pennies and write the total amount in the boxes below each plate. As an added activity, have the students colour the plate with the most money red and with the least money blue.
- The top of page 226 reinforces the equality of 1 dime and 10 pennies, as well as the vocabulary of dime, pennies, and cents.
- The bottom of page 226 requires the students to read the cost of each ticket and to put an X on the correct amount of dimes and pennies. Remind the students to count the dimes first, then count on the pennies. For the drawing activity, accept and discuss a variety of ways to make 45¢.



Put an X on enough money.

TICKET 16¢		TICKET 9¢	
TICKET 24¢		TICKET 35¢	
TICKET 52¢		TICKET 43¢	
TICKET 71¢		TICKET 90¢	



10 10 10 10

1 1 1 1 1

Draw the coins needed to buy one balloon.

Reinforcement

1. Place several dimes and pennies (less than \$1.00) in old change purses, wallets, or other money containers. Have the students open and count the money contained, recording the amount in their notebooks or on a prepared worksheet.
2. Price several objects and toys less than \$1.00 each. Ask the students to buy objects of their choice by counting out the correct number of dimes and pennies to a student selected as the store clerk.

Enrichment

Using the ticket amounts on page 226, have the students determine which 3 tickets could be bought for less than \$1.00. Accept a variety of answers. For example:

16¢, 24¢, 35¢
 71¢, 16¢, 9¢
 43¢, 35¢, 16¢, etc.

Provide dimes and pennies to check their choices.

Extra Practice

Put an X on enough money.

Worksheet M13

Pages 225-226

45¢ 	90¢ 	65¢
78¢ 	69¢ 	55¢

LESSON 4

Objective N41

Count by fives to 50.

Vocabulary

Count by fives, nickel, whisper count

Materials

Hundred chart

Nickels

Pennies

Small container

Introducing the Lesson

Have a short oral counting on session.

“Count by ones starting at 23.” After 4 or 5 numbers, say, “Stop.” Repeat with different numbers, e.g., 65, 19, 43, 28, and 87.

Teaching the Lesson

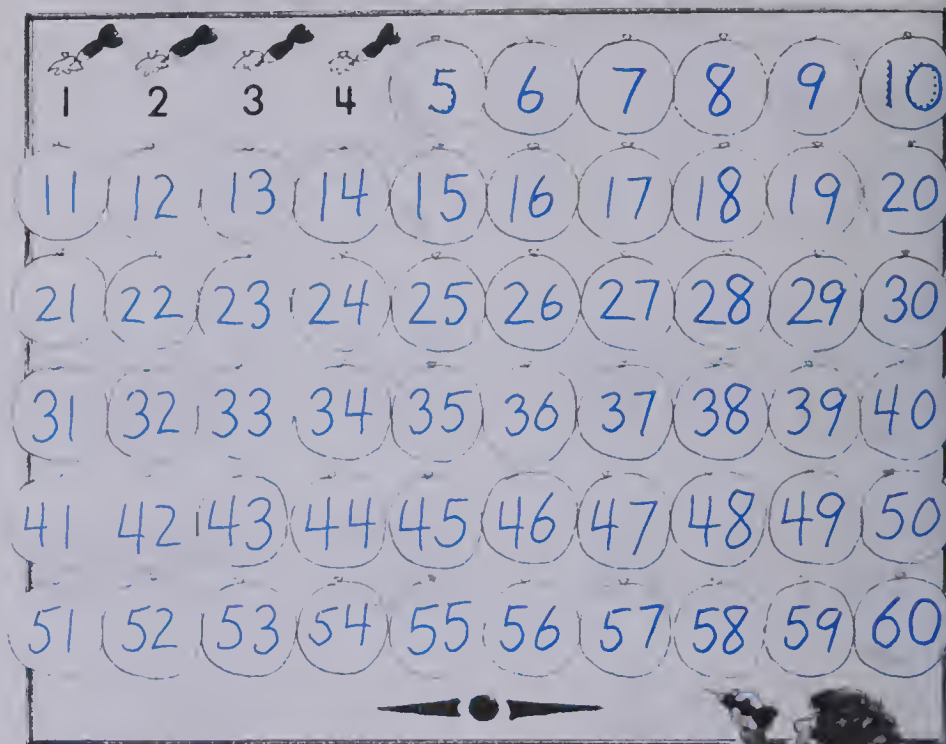
Ask the students to number themselves by ones with every fifth student standing up. Repeat the numbering off, only this time have them whisper count “One, two, three, four” and then count aloud, “**five**”; whisper “six, seven, eight, nine, **ten**, eleven” Now count only the students who are standing. Explain that counting every fifth one is called counting by fives.

Count as above, “One, two, three, four, **five**, six, seven, . . . , **fifty**.” Turn the whisper-counted numbers so that their blank sides are showing. Leave every fifth number unturned. Discuss the pattern that counting by fives makes on the hundred chart (2 vertical lines).

Hold a nickel in your right hand. Ask a student to place pennies in your left hand to equal a nickel. Ask, “How much money is a nickel?” 5¢. “How many pennies?” 5. Put another nickel in your right hand. Ask another student to add enough pennies to your left hand to equal 2 nickels. Ask, “How much money in my right hand?”

10¢. “Left hand?” 10¢. Continue in this way until 10 nickels are in your right hand. Use a container for the pennies in your left hand. Encourage counting by fives for the nickels, and counting on by ones for the pennies.

Fill in the missing numerals.



Count by **5s**.

0	5	10	15	20	25	30	35	40	45	50
---	---	----	----	----	----	----	----	----	----	----

Count by 10s.

0	10	20	30	40	50	60	70	80	90	100
---	----	----	----	----	----	----	----	----	----	-----

Count by 1 s.

92	93	94	95	96	97	98	99	100	101	102
----	----	----	----	----	----	----	----	-----	-----	-----

Count by fives

two hundred twenty-seven 227

Using the Pages

- The top of page 227 provides practice in writing the numbers from five to 60, focusing on the pattern for counting by fives. The bottom of the page requires the students to write the counting sequence for 5s and 10s. As an added challenge, the counting by ones sequence extends past 100 to 102.
- The top of page 228 shows nickels to encourage counting by fives to find how much money. The bottom of the page is a dot-to-dot activity. Help the students find the blue and red arrows which point to the starting numbers. The left side requires counting by fives from 0 to join the dots, the right side counting by ones from 75.

How much money?



15 ¢



35 ¢



20 ¢



40 ¢



25 ¢



45 ¢



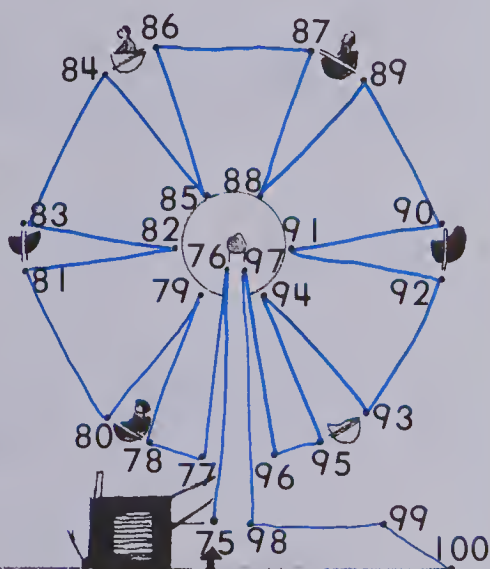
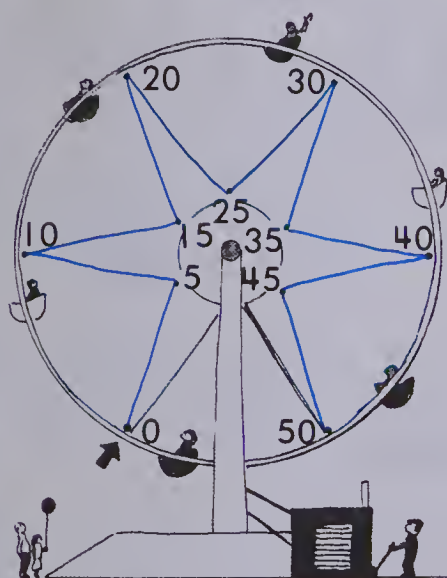
30 ¢



50 ¢

Count by 5s.

Count by 1s.



228 two hundred twenty-eight

Count by fives

Reinforcement

Price several objects or toys with 15¢, 20¢, 25¢ ... 50¢. Provide nickels for the students to buy an item.

Variation: Have the students draw the nickels required to buy an item. Tell them to draw circles and write 5 inside to show a nickel. ⑤

Enrichment

How many nickels are needed to make 1 dime? 2 dimes? 3 dimes? 4 dimes? 5 dimes? Have the students work in pairs. One shows the nickels and the other shows the dimes. Both should count each others' coins to verify.

Extra Practice

How much money?



20 ¢



40 ¢



30 ¢



10 ¢



15 ¢



50 ¢



45 ¢



5 ¢

Worksheet N41

Pages 227-228

UNIT 12 LESSON 5

Objective M14

Count nickels and pennies.

Vocabulary

Nickels, pennies, count by fives, cents, trading

Materials

10 nickels per student

10 pennies per student

Familiar objects (pencil, eraser, ruler, stapler, etc.) with price tags on them (under 50¢)

Introducing the Lesson

Ask the students to close their eyes and count aloud by fives to 50.

Teaching the Lesson

Give out 10 nickels and 10 pennies to each student. Display the objects priced for the students to buy. Have them show and count the coins needed to buy each object.

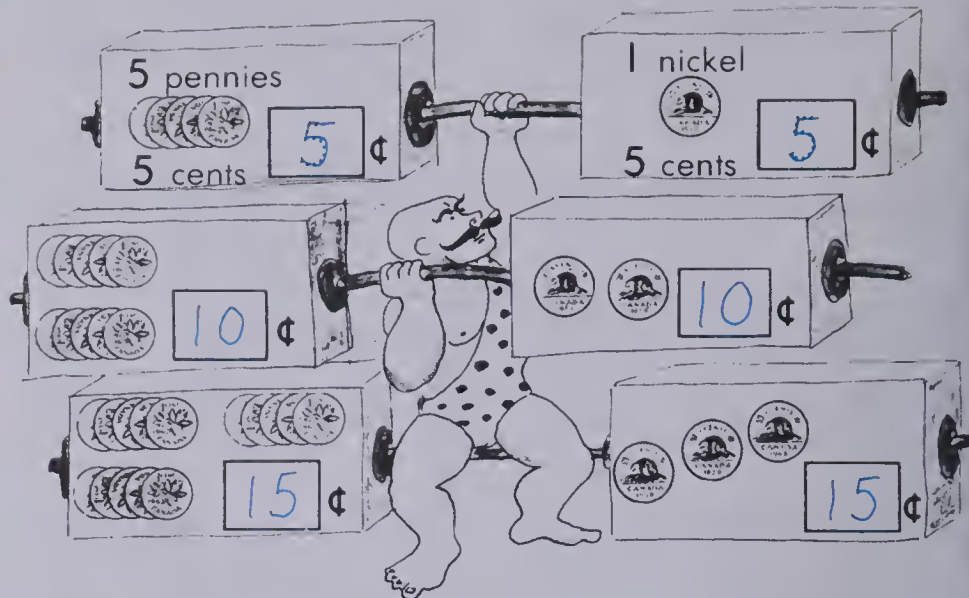


"Five, six, seven."

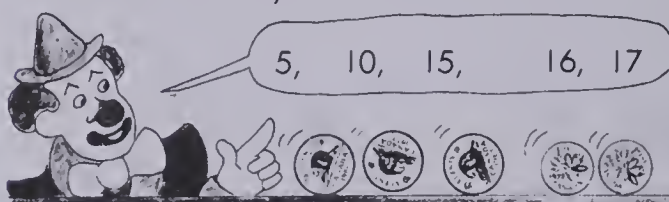
Accept 7 pennies, as well as 1 nickel and 2 pennies. Encourage the trading of 5 pennies for 1 nickel whenever possible.

Call out, "Three nickels, four pennies, how much money?" Ask the students to show the coins, then have individuals count by fives and ones to tell how much money in all. Repeat with differing amounts of coins totalling less than 50¢.





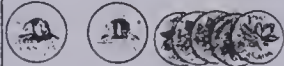

How much money?



How much money?



17¢ in all

 10 ¢	 10 ¢	 15 ¢
 15 ¢	 20 ¢	 20 ¢

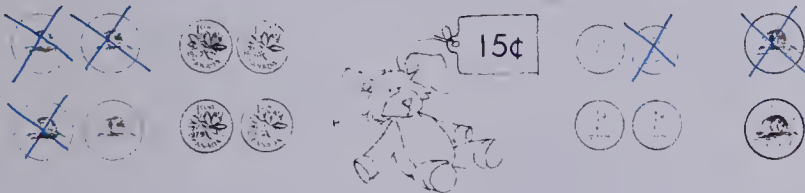
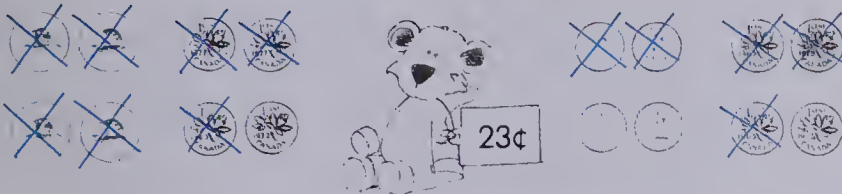
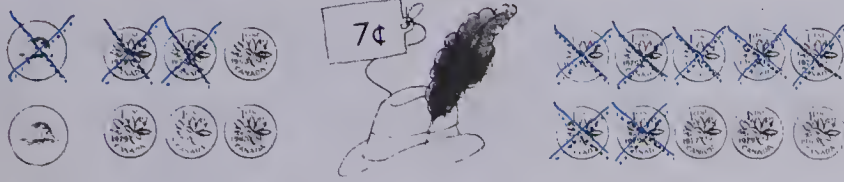
Nickels and pennies

two hundred twenty-nine 229

Using the Pages

- The top of page 229 reviews the equality between pennies on one side and nickels on the other. Direct the students to the vocabulary of pennies, nickels, and cents. The bottom of the page requires the counting of nickels and pennies and the writing of the total number of cents. Tell the students to count the nickels before the pennies.
- Page 230 challenges the students to mark the price of each object in 2 different ways. The combinations of coins allowed are: nickels/pennies, dimes/pennies, all pennies, and dimes/nickels.

Put an X on enough money. Show each in two ways.



230 two hundred thirty

Nickels and pennies; problem solving

Reinforcement

Prepare flash cards with amounts up to 50¢. Provide pennies, nickels, and dimes for the students to select in order to make the correct amount on the flash card.



The students should work in pairs to check each other's amounts.

Enrichment

Bring to school several newspapers and local advertisements from grocery stores. Have the students cut out items that are being advertised for less than one dollar. Paste the items on a card and ask the students to draw the coins needed to buy the item.

Variations:

- Ask how much money 2 items will cost.
- Sort the cards into 3 piles.
less than 30¢ less than 70¢
less than \$1.00
- Name 3 items you could buy with 50¢.
Name 3 items you could not buy with 50¢.

Extra Practice

Put an X on enough money.
Show each in two ways.



Worksheet M14

Pages 229-230

Objective N42

Count by twos to 20.

Vocabulary

Count by twos, whisper count

Materials

Hundred chart with removable cards to 20.

Introducing the Lesson

Count aloud by ones to 20. Have the students turn their heads to the right, then to the left as they count.

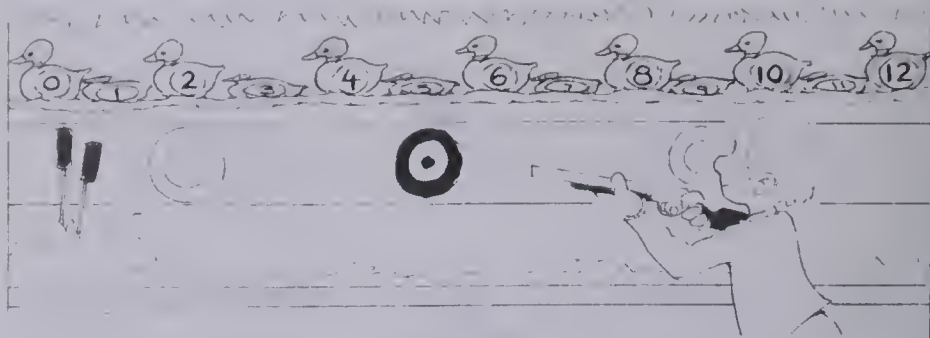
Now ask them to whisper count, "One, **two**, three, **four**, five, **six**, ... **twenty**," as they continue turning their heads. Explain that this will help us count by twos to 20.

Teaching the Lesson

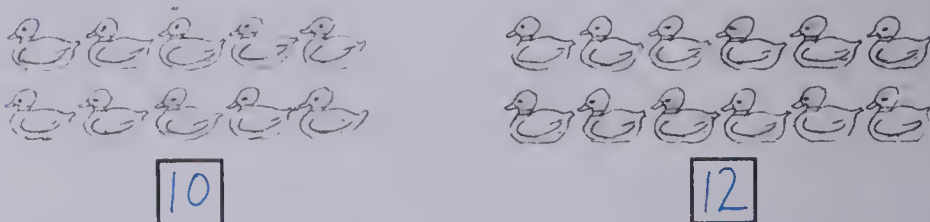
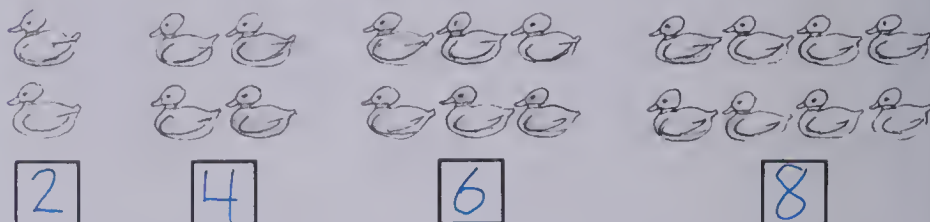
Refer to the hundred chart and whisper count as above. Have a student turn the 1, 3, 5 ... 19 cards so that their blank sides are showing. "The remaining cards show the numbers for counting by twos. Let's read them."

Drop two pennies at a time into an empty can as the students count by twos. Encourage whisper counting if they are having difficulty.

Choose 10 students to stand at the front of the class. Ask, "How many arms in all? Let's count by twos to find out." As the students count at their seats, have those who are standing raise their arms. Repeat with legs, ears, and eyes to practise counting by twos. To practise counting by tens, ask how many fingers for each person.



Count by 2s.



Keep counting.

0	2	4	6	8	10	12
---	---	---	---	---	----	----

20	25	30	35	40	45	50
----	----	----	----	----	----	----

Count by twos

two hundred thirty-one 231


Using the Pages


- Page 231 provides a model of ducks for the students to count by twos to 12. This is followed by the counting sequence for twos and fives.
- For the top of page 232, be sure the students can interpret the drawings or words they are asked to count on the clowns. Encourage skip counting by twos, fives, and tens. Do several examples orally with the students before assigning the page. The bottom of page 232 provides practice in counting pennies and nickels. Encourage the students to count by twos when the pennies are on top of one another.

Count to find how many.




How many clowns?  6

How many noses?  6


How many legs?  12

How many fingers?  60

How many eyes?  12

How many shoes?  12

How many buttons?  30

How many flower petals?  60

How much money?



20 ¢



60 ¢



8 ¢



20 ¢



8 ¢








12 ¢

232 two hundred thirty-two

Counting; problem solving

Reinforcement

Provide 20 counters. Have the students count by twos as they arrange them in twos and count.

Two, four, six, eight, ten, ...






Enrichment

1. Count by twos past 20 to 50. Allow the students to use the hundred chart. Write the counting sequence for twos on a blank hundred chart.

2. Ask the students to fill in the blanks.
 30, 32, ____, ____, ____, ____, 42
 70, 72, ____, ____, ____, ____, 82
 40, 42, ____, ____, ____, ____, 52

Extra Practice

Worksheet N42

Pages 231-232

Circle groups of two.

Count by twos.



How many butterflies in all? 20

Problem Solving Activities

Assign Level 1, Unit 12

Objective A46

Prepare for multiplication.

Vocabulary

Groups of; How many groups? How many in each group?

Materials

5 hula hoops
20 magnetic counters

Introducing the Lesson

Place 4 hula hoops in front of the class. Have four, two, three, and two students stand in each hoop, respectively. Ask, "How many students are in each hoop?" Write the numbers on the chalkboard. 4 2 3 2

Ask how one can find out how many students there are in all. Be sure the students agree that adding is required. Write the +, =, and □ beside the numbers to make the number sentence $4 + 2 + 3 + 2 = \square$. Have the students add $4 + 2$ to make 6, then add on 3 to make 9, and add on 2 to make 11. Repeat the above activity to make the following sentences.

$5 + 2 + 1 + 4 = \square$ $3 + 3 + 2 + 5 = \square$

Teaching the Lesson

Place four hula hoops in front of the class and ask two students to stand in each hoop. Ask: "How many groups?" Four. "How many in each group?" Two. "How many in all?" Eight. Write the addition sentence on the chalkboard to find how many students in all.

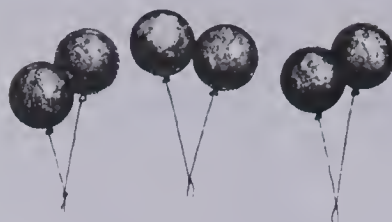
$2 + 2 + 2 + 2 = 8$

Explain that another way to find how many in all is to write 4 groups of $2 = 8$. Emphasize that the groups can be combined like this since there are the same number in each group.

Arrange 15 magnetic counters on the chalkboard in groups of 5. Draw a circle around each group. Ask, "How many groups?" Three. "How many in each group?" Five. "How many in all?" Fifteen.

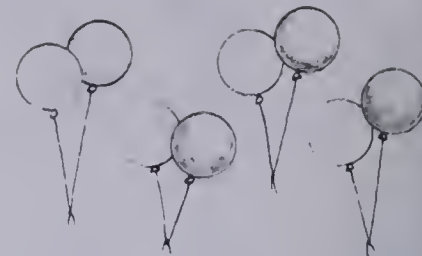
(Continued in Reinforcement)

How many balloons?



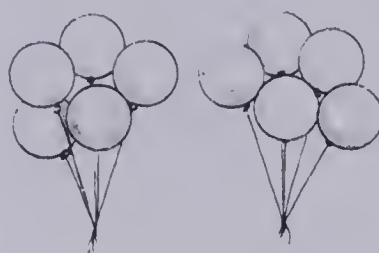
$$2 + 2 + 2 = \underline{6}$$

$$3 \text{ groups of } 2 = \underline{6}$$



$$2 + 2 + 2 + 2 = \underline{8}$$

$$4 \text{ groups of } 2 = \underline{8}$$



$$5 + 5 = \underline{10}$$

$$2 \text{ groups of } 5 = \underline{10}$$



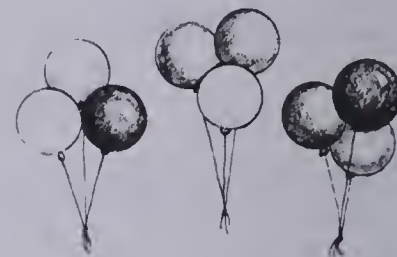
$$5 + 5 + 5 = \underline{15}$$

$$3 \text{ groups of } 5 = \underline{15}$$



$$3 + 3 = \underline{6}$$

$$2 \text{ groups of } 3 = \underline{6}$$



$$3 + 3 + 3 = \underline{9}$$

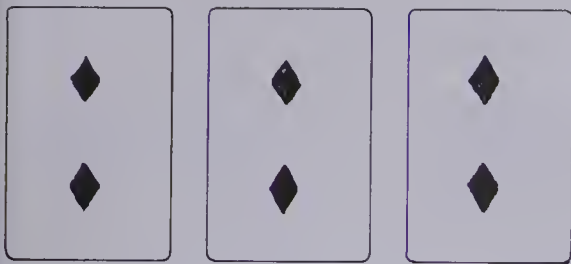
$$3 \text{ groups of } 3 = \underline{9}$$

Add the same number

two hundred thirty-three 233

Using the Pages

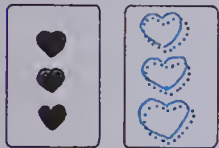
- Page 233 provides pictures of balloons in equal-sized groups to help the students solve the addition sentences and related pre-multiplication sentences. Do one example together before assigning the page.
- Page 234 requires the students to draw in the rest of each group to match the addition sentence below. The last 2 questions omit the words "groups of" in the pre-multiplication sentences.



$$2 + 2 + 2 = 6$$

$$3 \text{ groups of } 2 = 6$$

How many?



$$3 + 3 = 6$$

$$2 \text{ groups of } 3 = 6$$



$$5 + 5 + 5 = 15$$

$$3 \text{ groups of } 5 = 15$$



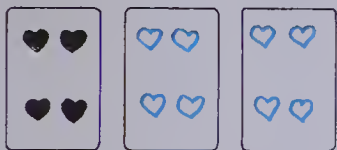
$$2 + 2 + 2 = 6$$

$$3 \text{ groups of } 2 = 6$$



$$2 + 2 + 2 + 2 = 8$$

$$4 \text{ groups of } 2 = 8$$



$$4 + 4 + 4 = 12$$

$$3 \text{ fours} = 12$$



$$5 + 5 = 10$$

$$2 \text{ fives} = 10$$

234 two hundred thirty-four

Add the same number

Reinforcement

Ask for and write the addition sentence on the board. $5 + 5 + 5 = 15$. Ask for the new way to find how many in all. *3 groups of 5 = 15*. Explain that this new way can also be shortened to: *3 fives = 15*. The words "groups of" are omitted, but we can still say them in our heads.

Write $3 + 3 + 3 + 3 = \square$ on the chalkboard. Ask a student to arrange the magnetic counters to model the sentence. Ask, "How many groups?" *Four*. "How many in each group?" *Three*. "How many in all?" *Twelve*. Ask if there are the same number in each group. "What are the two new ways to find how many in all?" *4 groups of 3 = 12, 4 threes = 12*.

Repeat the activity above with $2 + 2 + 2 = \square$.

1. Provide the following worksheet for the students to use for practice at their desk with counters.

Make 1 group of 3. How many are there? _____

Make 2 groups of 3. How many are there? _____

Make 4 groups of 3. How many are there? _____

Make 5 groups of 3. How many are there? _____

2. Make similar worksheets for the 2s, 4s, and 5s for products to 20. Note: it is important that the students physically manipulate and group the counters, then record what they found. If they become bored and feel that there is a quicker way to deal with this task, they are ready to be introduced to the multiplication concept.

Enrichment

Have the students arrange 12 counters into equal groups. Explain that there are a variety of ways to do this. Call on various students for their arrangements and write the appropriate sentences on the board.

For example:

$$6 + 6 = 12$$

$$2 \text{ groups of } 6 = 12$$

$$2 \text{ sixes} = 12$$

$$3 + 3 + 3 + 3 = 12$$

$$4 \text{ groups of } 3 = 12$$

$$4 \text{ threes} = 12$$

Extra Practice

How many?



$$2 + 2 + 2 = 6$$

$$3 \text{ groups of } 2 = 6$$



$$4 + 4 = 8$$

$$2 \text{ groups of } 4 = 8$$



$$5 + 5 + 5 = 15$$

$$3 \text{ groups of } 5 = 15$$



$$4 + 4 + 4 = 12$$

$$3 \text{ groups of } 4 = 12$$



$$3 + 3 + 3 = 9$$

$$3 \text{ groups of } 3 = 9$$



$$2 + 2 + 2 + 2 = 8$$

$$4 \text{ groups of } 2 = 8$$

Worksheet A46

Pages 233-234

UNIT 12 LESSON 8

Objective A47

Introduce the multiplication sign.

Vocabulary

Multiply, times, multiplication sentence

Direction words: Multiply. Draw the missing groups.

Materials

20 counters per student
20 magnetic counters

Introducing the Lesson

Write "3 groups of 2" on the chalkboard. Have the students show this at their desks using the counters provided. Ask for the short way to say this and write it below (3 twos). Ask, "How many groups?" Three. "How many in each group?" Two. "How many in all?" Six.

Repeat the above activity with 5 groups of 2 and 4 groups of 3. The students should be comfortable with the vocabulary used and the pre-multiplication sentences written.

Teaching the Lesson

Display 20 magnetic counters on the chalkboard and have a student arrange them in groups of 4. Ask for the addition sentence to find how many counters in all and write it on the chalkboard below the counters ($4 + 4 + 4 + 4 + 4 = 20$). Then ask for the other two ways to find how many in all and write them below the addition sentence. $5 \text{ groups of } 4 = 20$ and $5 \text{ fours} = 20$. Explain that there is another way to write 5 fours. Write $5 \times 4 = 20$ on the chalkboard. Point to the multiplication sign and explain that this sign is read as "times".

Read this as "five times four equals twenty". Explain that this is called a multiplication sentence and the \times sign means to multiply. "Multiplication is used when groups of equal size are being combined."

Do another board demonstration with 15 counters arranged in groups of 3.

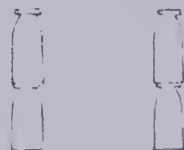


$$2 \text{ groups of } 5 = 10$$

$$2 \text{ fives} = 10$$

$$2 \times 5 = 10$$

How many?



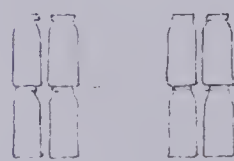
$$2 \text{ twos} = \underline{4}$$

$$2 \times 2 = \underline{4}$$



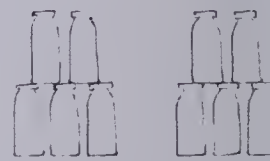
$$2 \text{ threes} = \underline{6}$$

$$2 \times 3 = \underline{6}$$



$$2 \text{ fours} = \underline{8}$$

$$2 \times 4 = \underline{8}$$



$$2 \text{ fives} = \underline{10}$$

$$2 \times 5 = \underline{10}$$



$$4 \text{ twos} = \underline{8}$$

$$4 \times 2 = \underline{8}$$



$$3 \text{ twos} = \underline{6}$$

$$3 \times 2 = \underline{6}$$

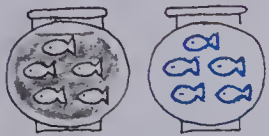
Multiplication

two hundred thirty-five 235

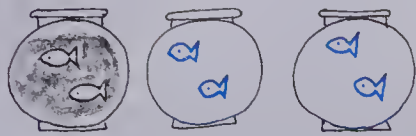
Using the Pages

- Discuss the picture of the milk bottle game at the top of page 235. Direct the students to use the pictures provided to find how many milk bottles are to be knocked down in each case.
- Ask the students to read aloud each multiplication sentence on page 236 and tell how many groups and how many in each group. Tell the students to first draw in the missing fish, then multiply to find how many fish in all. Assign the bottom of the page for enrichment.

Multiply. Draw the missing groups.



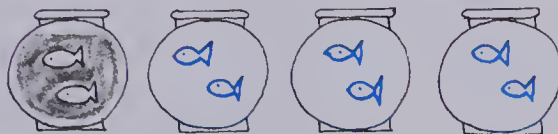
$$2 \times 5 = \underline{10}$$



$$3 \times 2 = \underline{6}$$



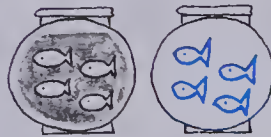
$$2 \times 2 = \underline{4}$$



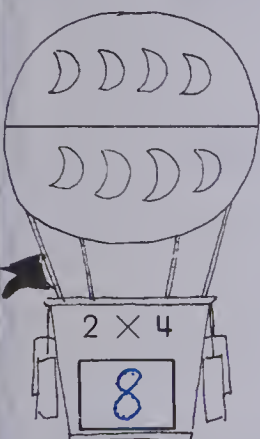
$$4 \times 2 = \underline{8}$$



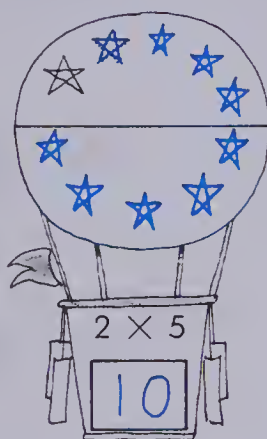
$$2 \times 3 = \underline{6}$$



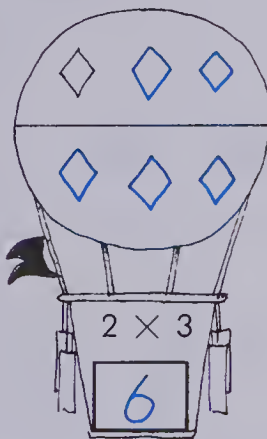
$$2 \times 4 = \underline{8}$$



236 two hundred thirty-six



Multiplication



Reinforcement

1. Ask the students to arrange 3 groups of 6 counters at their desks. Ask for the 4 sentences to find how many in all and write them on the board. Have the students read each sentence aloud. Repeat this activity with 2 groups of 4.

2. Prepare 5 matching cards to make a set for each of the following numbers: 2, 4, 6, 8, 9, 10, 12, 14, 15, 16, 18, and 20. For example:

8		4 + 4	2 x 4	2 fours
12		4 + 4 + 4	3 x 4	3 fours

Make each set self-checking by placing the same code (such as a sticker) on the back of each card. Ask the students to match the cards to make a set of 5 for each number.

3. Prepare a worksheet or card with exercises like the following. The students are to circle the phrases that describe the picture.

5 threes	3 x 5
3 fives	5 x 3
3 + 3 + 3 + 3 + 3	3 groups of 5
5 + 5 + 5	5 groups of 3

Enrichment

Take the product card and the multiplication card from Reinforcement activity 2. Play "Rummy", "Snap", or "Concentration" with these cards. For example:

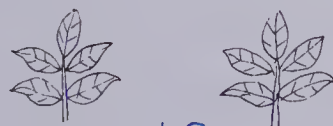
2 x 2	4	3 x 2	6
2 x 3	6	3 x 3	9
2 x 4	8	3 x 4	12
2 x 5	10	3 x 5	15
2 x 6	12	3 x 6	18
...			
2 x 9	18		

Extra Practice

How many?



$$\begin{aligned} \text{twos} &= \underline{6} \\ \times 2 &= \underline{6} \end{aligned}$$



$$\begin{aligned} 2 \text{ fives} &= \underline{10} \\ 2 \times 5 &= \underline{10} \end{aligned}$$



$$\begin{aligned} \text{threes} &= \underline{12} \\ \times 3 &= \underline{12} \end{aligned}$$



$$\begin{aligned} 5 \text{ twos} &= \underline{10} \\ 5 \times 2 &= \underline{10} \end{aligned}$$

Worksheet A47

Pages 235-236

UNIT 12 LESSON 9

Objective M15

Count with the quarter.

Vocabulary

Quarter, twenty-five cents

Materials

25 pennies, 10 nickels, 10 dimes,
1 quarter

Introducing the Lesson

Display and discuss the names and values of the penny, nickel, and dime.

1 dime is ten cents or 10¢.

1 nickel is five cents or 5¢.

1 penny is one cent or 1¢.

Review the counting of dimes and pennies, nickels and pennies, as well nickels and dimes.



Ten, twenty, thirty, thirty-one, ..., thirty-four.



Five, ten, fifteen, sixteen, seventeen.



Ten, twenty, twenty-five, thirty, thirty-five.

Teaching the Lesson

Ask the students how to make twenty-five cents using pennies, nickels, and dimes. Accept a variety of ways and draw them on the chalkboard. Count each one aloud.

25 pennies

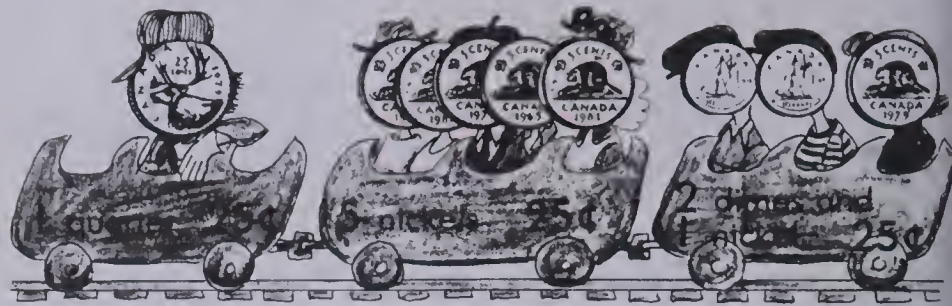
2 dimes and 1 nickel

5 nickels

1 dime and 3 nickels.

Show the quarter and explain that this is also the same as twenty-five cents and is called a quarter.

Play "How Much". Hold up a quarter and ask how much. The students are to respond by saying twenty-five cents. Now add a penny and ask how much. The students say, *twenty-six cents*. Continue adding a penny to make 30¢, asking how much each time. Then add a nickel, then a dime, then a nickel. The total should be 50¢.



How much money?



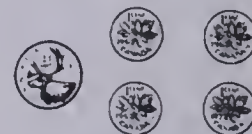
26 ¢



27 ¢



28 ¢



29 ¢



30 ¢



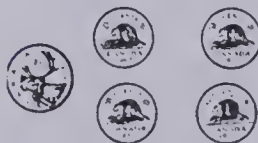
35 ¢



30 ¢



35 ¢



45 ¢



35 ¢

Quarters

two hundred thirty-seven 237

Using the Pages

- On page 237, review the vocabulary, spelling, and writing of the coins to make each 25¢ train, before asking the students to count each group of coins to find how much money.
- Explain that each item on page 238 can be matched to a set of coins on the right and the left sides. Before matching, ask the students to count each set of coins aloud to make sure they can count a variety of coins together.

Match.

Activity: Matching money amounts to objects.

Objects and their prices:

- Balloon: 50¢
- Hat: 38¢
- Ball: 70¢
- Flag: 27¢
- Car: 43¢

Money containers (left side):

- Container 1: 4 pennies (4¢)
- Container 2: 8 pennies (8¢)
- Container 3: 6 pennies (6¢)
- Container 4: 8 pennies (8¢)
- Container 5: 2 pennies (2¢)

Money containers (right side):

- Container 6: 8 pennies (8¢)
- Container 7: 3 pennies (3¢)
- Container 8: 4 pennies (4¢)
- Container 9: 4 pennies (4¢)
- Container 10: 3 pennies (3¢)

Connections (blue lines):

- Balloon (50¢) connects to Container 2 (8¢) and Container 4 (8¢).
- Hat (38¢) connects to Container 1 (4¢) and Container 3 (6¢).
- Ball (70¢) connects to Container 5 (2¢) and Container 10 (3¢).
- Flag (27¢) connects to Container 6 (8¢) and Container 7 (3¢).
- Car (43¢) connects to Container 8 (4¢) and Container 9 (4¢).

238 two hundred thirty-eight

Money

Reinforcement

1. Fill several small containers, such as cough-drop tins, baby food jars, etc., with a variety of coins. Use only one quarter in each, but several of the other coins. Have the students count the money in each container and check their answers by turning the container over where the answer is posted.
2. Price a few classroom objects with tags less than 50¢ each. Have the students buy the objects of their choice by counting out the correct coins. Encourage the use of a quarter, dimes, and nickels by limiting the pennies available to 4¢.

Enrichment

1. Provide students with worksheets and say, "Make 30¢ in as many different ways as you can. Draw each way on the worksheet provided." Provide the coins for the students to use. Variation: Make 50¢ in as many different ways as you can.
2. Prepare challenging cards like the following.

Challenging cards:

Card 1: 6 coins, 23¢. Legend: — quarters, — dimes, — nickels, — pennies.

Card 2: 36¢, 3 coins. Legend: — quarters, — dimes, — nickels, — pennies.

Extra Practice

How much money?

Worksheet M15 Pages 237-238

Practice problems:

- Problem 1: 4 pennies (4¢) + 24 pennies (24¢) = 28¢
- Problem 2: 1 dime (10¢) + 25 pennies (25¢) = 35¢
- Problem 3: 4 quarters (40¢)
- Problem 4: 1 dime (10¢) + 23 pennies (23¢) = 33¢
- Problem 5: 1 dime (10¢) + 40 pennies (40¢) = 50¢
- Problem 6: 1 dime (10¢) + 35 pennies (35¢) = 45¢

UNIT 12 LESSON 10

Objective PS8

Buy objects to \$1.00.

Vocabulary

Bought, left

Materials

Pennies, nickels, dimes, quarters

3 lunch items priced less than \$1.00

(sandwich 75¢, cookies 45¢, apple 20¢)

Die, numbered 0-9

Introducing the Lesson

Play "Coin Count". Divide the students in groups of 4. Provide 9 pennies, 5 nickels, 10 dimes, and 1 quarter for each group. Have each person in the group be in charge of one type of coin. Place the same quantity of coins in a bag. The teacher rolls the die and takes out that number of coins from the bag. As the coins are withdrawn, their names are called out. For example, if you roll a 4, call out 1 penny, 1 dime, 1 quarter, 1 dime. Each group identifies and counts the coins called and then writes the total amount on a piece of paper. When all the groups are finished, collect the papers and award points as follows:

2 points for correct amount including the ¢ sign.

1 point for correct amount, minus the ¢ sign.

0 points for incorrect amount.

The group to reach 10 points is the winner. Keep score on the chalkboard.

Teaching the Lesson

Keep the groups and coins as described in the Introduction. Display the lunch items. Explain that you have 35¢ to buy the apple. Have each group show 35¢. Draw the different sets of coins on the chalkboard. Discuss the coins needed to buy the apple with each group. Cross out the coins and count the change that is left.

Repeat for the sandwich and cookies. If the students are able, have each group show 50¢ to buy the cookies (and 90¢ to buy the sandwich) and find out how much is left on their own.



penny 1¢


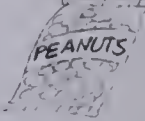
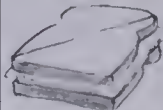





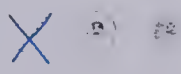
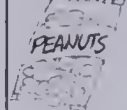










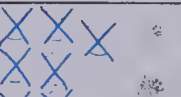
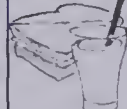
nickel 5¢

dime 10¢



quarter 25¢

 25¢	 10¢
 50¢	 15¢
 15¢	 20¢

Had	Bought	Draw the coins left.	How much left?
		⑤ ①	6¢
		⑩ ⑩ ⑩	30¢
		⑤ ① ①	7¢
		⑩ ⑤ ①	16¢
		⑤ ① ① ① ①	9¢
			0¢
		⑩ ⑤ ① ① ①	18¢

Problem solving

two hundred thirty-nine 239

Using the Page

- Review the vocabulary and amounts of each coin at the top of page 239. Discuss the items and how much each one costs. Do the first 2 questions together. Provide real coins if they are having difficulty counting the coins needed to buy an item.

Enrichment

Put the following chart on a worksheet or the chalkboard. Provide coins as needed.

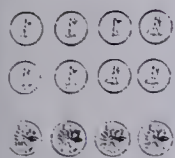


How much?				
Penny	Nickel	Dime	Quarter	Total
4	2	1	1	□
9	0	6	0	□
6	1	3	1	□
3	7	0	0	□
2	2	5	1	□

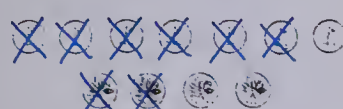



Count.

15	20	25	30	35
47	48	49	50	51



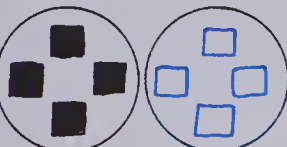
60	70	80	90	100
4	6	8	10	12

How much money?

 84 ¢	 39 ¢	 31 ¢
--	---	---

Had  Spent  How much left? 12 ¢	Had  Spent  How much left? 12 ¢
---	---

How many?

 2 fives = <u>10</u> 2 × 5 = <u>10</u>	 2 threes = <u>6</u> 2 × 3 = <u>6</u>	 2 fours = <u>8</u> 2 × 4 = <u>8</u>
--	--	---

240 two hundred forty

Unit 12 Test

UNIT 12

TEST

Part 1: Count by ones, twos, fives, and tens.

Part 2: Count dimes, pennies, and quarters.

Part 3: Name the amount left after buying an object costing less than \$1.00.

Part 4: Prepare for multiplication.

Informal Assessment

1. Counting Skills

- By ones to 100: Can the student count on from a given number?
42 — — —, 17 — — —, 78 — — —
Is the counting rote? Is there hesitation at the decades?
- By 5s to 50, 10s to 100, 2s to 12: Can the student rote count in multiples?
Can the student count in multiples using counters?
- With coins: Can the student count groups of coins? e.g. all dimes, all nickels, all pennies.
Can the student count combinations of coins? e.g. dimes/pennies, nickels/pennies, dimes/nickels/pennies.
Given an amount like 23¢, can the student count out the correct change from a pile of coins?
(Accept a variety of answers.)

2. Vocabulary of Money

Have the students identify the coins (1¢, 5¢, 10¢, 25¢) by name and tell their value. Note the language used. Ask the students to show more than one way to make ten cents; twenty-five cents.

3. Multiplication Concept

- Show 4 groups of 2 pencils.

|| || || ||

Can the student describe what is shown and write an addition sentence to find how many pencils in all?

- Can the student model 2 groups of 4 and 5 twos using counters to find how many in all?
- Can the student model a multiplication sentence 3 × 4 using counters to find how many in all?

Name _____

Write how many.



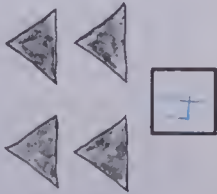
2



3



1

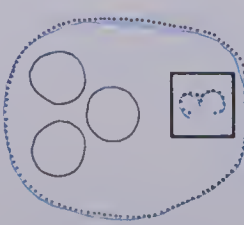


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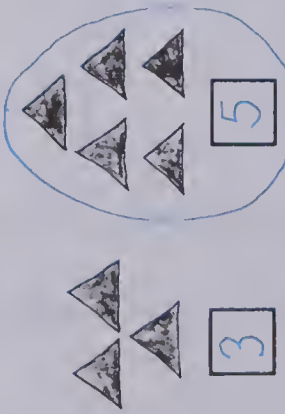


5

Which has more?



3



3



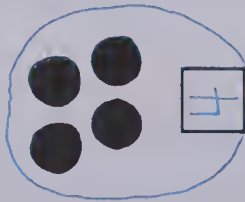
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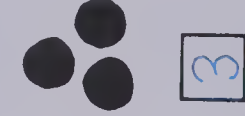
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4

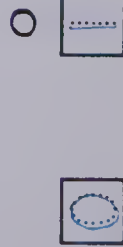


4



3

Count and draw.



0



2

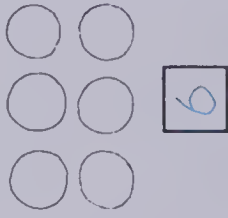


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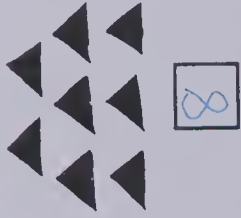


4

Write how many.



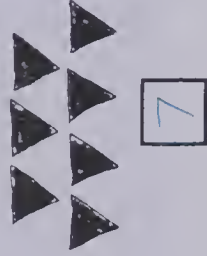
6



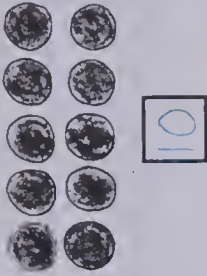
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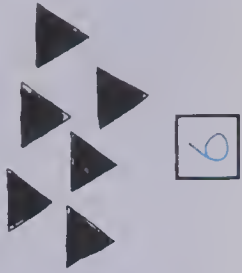
9



7

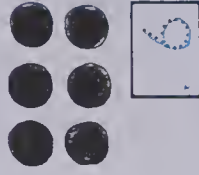


10

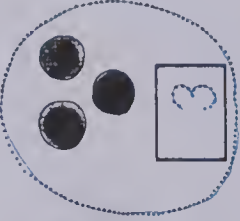


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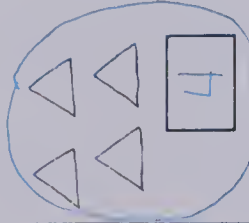
Which has less?



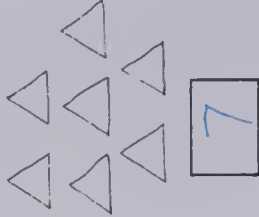
6



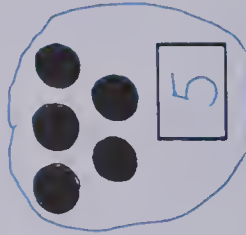
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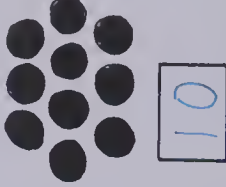
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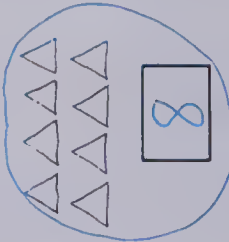
7



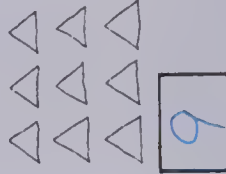
5



10



8



9

Count.

0 1 2 3 4 5 6 7 8 9 10

Add.



$$3 + 1 = \boxed{4}$$



$$4 + 1 = \boxed{5}$$



$$2 + 0 = \boxed{2}$$

Draw. Add.



$$1 + 2 = \boxed{3}$$



$$2 + 3 = \boxed{5}$$



$$0 + 4 = \boxed{4}$$

Add.

$$\begin{array}{r} 6 \\ + 1 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 200 \\ + 40000 \\ \hline 6 \end{array}$$

$$\begin{array}{r} 5 \\ + 0 \\ \hline 5 \end{array}$$

Draw. Add.

$$\begin{array}{r} 10 \\ + 40000 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 3000 \\ + 200 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 10 \\ + 500000 \\ \hline 6 \end{array}$$

Add.



$$2\text{¢} + 2\text{¢} = \boxed{4}\text{¢}$$



$$4\text{¢} + 0\text{¢} = \boxed{4}\text{¢}$$

Subtract. Cross out.

$$\begin{array}{r} 6 \\ - 1 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 4 \\ - 2 \\ \hline 2 \end{array}$$

$$\begin{array}{r} 5 \\ - 3 \\ \hline 2 \end{array}$$



$$3 - 1 = \boxed{2}$$



$$8 - 2 = \boxed{6}$$



$$4 - 0 = \boxed{4}$$

Draw. Subtract.



$$3 - 2 = \boxed{1}$$



$$5 - 4 = \boxed{1}$$



$$2 - 1 = \boxed{1}$$

$$\begin{array}{r} 5 \\ - 1 \\ \hline 4 \end{array}$$

$$\begin{array}{r} 3000 \\ - 0 \\ \hline 3 \end{array}$$

$$\begin{array}{r} 4 \\ - 3 \\ \hline 1 \end{array}$$

Subtract.



$$5\text{¢} - 2\text{¢} = \boxed{3}\text{¢}$$



$$4\text{¢} - 1\text{¢} = \boxed{3}\text{¢}$$

Count back.

10 9 8 7 6 5 4 3 2 1 0

10 8 6 4 2 0

Name _____

Add.

$$\begin{array}{r} 3 \\ + 2 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 1 \\ + 3 \\ \hline 4 \end{array}$$

$$\begin{array}{r} 4 \\ + 1 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 3 \\ + 3 \\ \hline 6 \end{array}$$

$$\begin{array}{r} 2 \\ + 5 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 4 \\ + 2 \\ \hline 6 \end{array}$$

$$\begin{array}{r} 0 \\ + 7 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 3 \\ + 4 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 1 \\ + 5 \\ \hline 6 \end{array}$$

$$\begin{array}{r} 2 \\ + 2 \\ \hline 4 \end{array}$$

$$\begin{array}{r} 6 \\ + 1 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 5 \\ + 2 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 6 \\ + 0 \\ \hline 6 \end{array}$$

$$\begin{array}{r} 2 \\ + 3 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 6 \\ + 1 \\ \hline 7 \end{array}$$

Subtract.

$$\begin{array}{r} 5 \\ - 2 \\ \hline 3 \end{array}$$

$$\begin{array}{r} 6 \\ - 1 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 4 \\ - 3 \\ \hline 1 \end{array}$$

$$\begin{array}{r} 7 \\ - 2 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 5 \\ - 3 \\ \hline 2 \end{array}$$

$$\begin{array}{r} 7 \\ - 5 \\ \hline 2 \end{array}$$

$$\begin{array}{r} 6 \\ - 3 \\ \hline 3 \end{array}$$

$$\begin{array}{r} 7 \\ - 4 \\ \hline 3 \end{array}$$

$$\begin{array}{r} 6 \\ - 2 \\ \hline 4 \end{array}$$

$$\begin{array}{r} 7 \\ - 6 \\ \hline 1 \end{array}$$

$$\begin{array}{r} 6 \\ - 4 \\ \hline 2 \end{array}$$

$$\begin{array}{r} 7 \\ - 0 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 7 \\ - 3 \\ \hline 4 \end{array}$$

$$\begin{array}{r} 6 \\ - 5 \\ \hline 1 \end{array}$$

$$\begin{array}{r} 7 \\ - 1 \\ \hline 6 \end{array}$$

Add.

$$\begin{array}{r} 4 \\ + 4 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 3 \\ + 6 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 2 \\ + 5 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 8 \\ + 1 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 5 \\ + 3 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 7 \\ + 2 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 4 \\ + 5 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 1 \\ + 7 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 2 \\ + 6 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 3 \\ + 4 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 0 \\ + 8 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 6 \\ + 3 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 3 \\ + 5 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 5 \\ + 4 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 9 \\ + 0 \\ \hline 9 \end{array}$$

Subtract.

$$\begin{array}{r} 8 \\ - 7 \\ \hline 1 \end{array}$$

$$\begin{array}{r} 8 \\ - 4 \\ \hline 4 \end{array}$$

$$\begin{array}{r} 9 \\ - 3 \\ \hline 6 \end{array}$$

$$\begin{array}{r} 9 \\ - 5 \\ \hline 4 \end{array}$$

$$\begin{array}{r} 7 \\ - 4 \\ \hline 3 \end{array}$$

$$\begin{array}{r} 8 \\ - 6 \\ \hline 2 \end{array}$$

$$\begin{array}{r} 9 \\ - 7 \\ \hline 2 \end{array}$$

$$\begin{array}{r} 8 \\ - 5 \\ \hline 3 \end{array}$$

$$\begin{array}{r} 8 \\ - 2 \\ \hline 6 \end{array}$$

$$\begin{array}{r} 9 \\ - 6 \\ \hline 3 \end{array}$$

$$\begin{array}{r} 9 \\ - 4 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 8 \\ - 3 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 9 \\ - 8 \\ \hline 1 \end{array}$$

$$\begin{array}{r} 8 \\ - 1 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 9 \\ - 2 \\ \hline 7 \end{array}$$

Name _____

Add.

$$\begin{array}{r} 3 \\ + 7 \\ \hline 10 \end{array}$$

$$\begin{array}{r} 6 \\ + 4 \\ \hline 10 \end{array}$$

$$\begin{array}{r} 8 \\ + 2 \\ \hline 10 \end{array}$$

$$\begin{array}{r} 4 \\ + 3 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 1 \\ + 9 \\ \hline 10 \end{array}$$

Subtract.

$$\begin{array}{r} 10 \\ - 4 \\ \hline 6 \end{array}$$

$$\begin{array}{r} 10 \\ - 7 \\ \hline 3 \end{array}$$

$$\begin{array}{r} 10 \\ - 6 \\ \hline 4 \end{array}$$

$$\begin{array}{r} 10 \\ - 1 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 10 \\ - 9 \\ \hline 1 \end{array}$$

Write how many.



10



12



14



11



15



17



18



16



20

Count.

10 11 12 13 14 15 16 17 18 19 20

Which is greater?

13 17

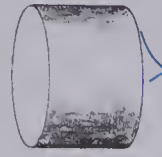
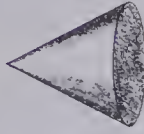
11 9

20 12

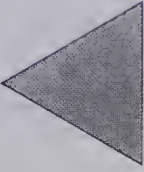
X each box.



✓ each can.



X each circle.



✓ each square.



Colour the white face.

X its edges.

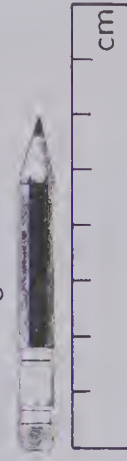
✓ its corners.



Which is longer?



How long?



6 cm

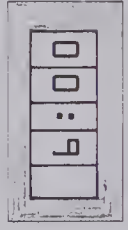
What time is it?



3 o'clock



10 o'clock



6 o'clock

Name _____

Write how many.



3 tens

30 in all



5 tens

50 in all



7 tens

70 in all

Count by tens.

10	20	30	40	50	60	70	80	90
----	----	----	----	----	----	----	----	----

Write how many.



tens	ones
2	5

25



tens	ones
6	3

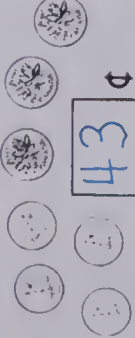
63



tens	ones
9	8

98

How much in all?



43¢

84¢

Count.

27	28	29	30	31	32
----	----	----	----	----	----

56	57	58	59	60	61
----	----	----	----	----	----

Extra Practice: Unit 9

two hundred forty-nine 249

Add.

$$\begin{array}{r} 7 \\ + 3 \\ \hline 10 \end{array}$$

$$\begin{array}{r} 7 \\ + 4 \\ \hline 11 \end{array}$$

$$\begin{array}{r} 9 \\ + 2 \\ \hline 11 \end{array}$$

$$\begin{array}{r} 9 \\ + 3 \\ \hline 12 \end{array}$$

$$\begin{array}{r} 8 \\ + 3 \\ \hline 11 \end{array}$$

$$\begin{array}{r} 8 \\ + 4 \\ \hline 12 \end{array}$$

$$\begin{array}{r} 7 \\ + 4 \\ \hline 11 \end{array}$$

$$\begin{array}{r} 7 \\ + 5 \\ \hline 12 \end{array}$$

$$\begin{array}{r} 6 \\ + 6 \\ \hline 12 \end{array}$$

$$\begin{array}{r} 3 \\ + 9 \\ \hline 12 \end{array}$$

Subtract.

$$\begin{array}{r} 10 \\ - 2 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 11 \\ - 2 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 11 \\ - 3 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 12 \\ - 3 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 11 \\ - 4 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 12 \\ - 4 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 11 \\ - 6 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 12 \\ - 6 \\ \hline 6 \end{array}$$

$$\begin{array}{r} 11 \\ - 7 \\ \hline 4 \end{array}$$

$$\begin{array}{r} 12 \\ - 5 \\ \hline 7 \end{array}$$

Add or subtract.

$$\begin{array}{r} 6 \\ + 5 \\ \hline 11 \end{array}$$

$$\begin{array}{r} 9 \\ + 2 \\ \hline 11 \end{array}$$

$$\begin{array}{r} 12 \\ - 8 \\ \hline 4 \end{array}$$

$$\begin{array}{r} 11 \\ - 9 \\ \hline 2 \end{array}$$

$$\begin{array}{r} 12 \\ - 7 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 3 \\ + 9 \\ \hline 12 \end{array}$$

$$\begin{array}{r} 11 \\ - 8 \\ \hline 3 \end{array}$$

$$\begin{array}{r} 6 \\ + 5 \\ \hline 11 \end{array}$$

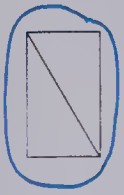
$$\begin{array}{r} 2 \\ + 9 \\ \hline 11 \end{array}$$

$$\begin{array}{r} 10 \\ - 3 \\ \hline 7 \end{array}$$

250 two hundred fifty

Extra Practice: Unit 10

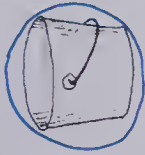
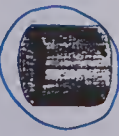
Which show one half?



Which show one fourth?



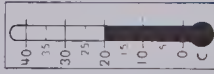
Which holds more?



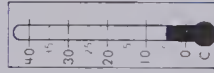
Which is heavier?




How hot is it?



20 °C



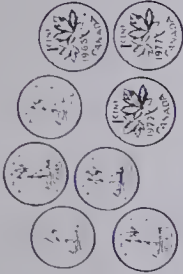
5 °C

How many  cover the figure?



12 

How much money?



53 ¢



22 ¢



35 ¢

Count.

5	10	15	20	25	30	35	40	45	50
2	4	6	8	10	12				

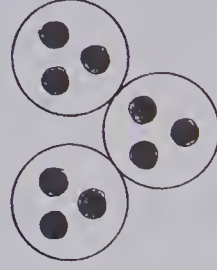
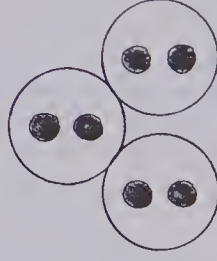
How many in all?



2 fours = 8

2 twos = 4

2 fives = 10



2 threes = 6

3 twos = 6

3 threes = 9

Name _____

Add.

$$\begin{array}{r} 3 \\ + 3 \\ \hline 6 \end{array}$$

$$\begin{array}{r} 2 \\ + 7 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 2 \\ + 5 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 3 \\ + 5 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 5 \\ + 4 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 3 \\ + 1 \\ \hline 4 \end{array}$$

$$\begin{array}{r} 1 \\ + 5 \\ \hline 6 \end{array}$$

$$\begin{array}{r} 6 \\ + 2 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 3 \\ + 6 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 1 \\ + 4 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 4 \\ + 2 \\ \hline 6 \end{array}$$

$$\begin{array}{r} 1 \\ + 7 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 2 \\ + 2 \\ \hline 4 \end{array}$$

$$\begin{array}{r} 7 \\ + 1 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 1 \\ + 8 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 3 \\ + 2 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 7 \\ + 2 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 6 \\ + 3 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 6 \\ + 1 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 4 \\ + 5 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 5 \\ + 0 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 5 \\ + 3 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 4 \\ + 4 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 4 \\ + 3 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 8 \\ + 1 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 0 \\ + 9 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 2 \\ + 3 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 1 \\ + 1 \\ \hline 2 \end{array}$$

$$\begin{array}{r} 6 \\ + 0 \\ \hline 6 \end{array}$$

$$\begin{array}{r} 5 \\ + 1 \\ \hline 6 \end{array}$$

$$\begin{array}{r} 2 \\ + 6 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 2 \\ + 4 \\ \hline 6 \end{array}$$

$$\begin{array}{r} 5 \\ + 2 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 3 \\ + 4 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 0 \\ + 7 \\ \hline 7 \end{array}$$

Extra Practice: Addition (to 9)

two hundred fifty-three 253

Subtract.

$$\begin{array}{r} 4 \\ - 2 \\ \hline 2 \end{array}$$

$$\begin{array}{r} 9 \\ - 6 \\ \hline 3 \end{array}$$

$$\begin{array}{r} 4 \\ - 3 \\ \hline 1 \end{array}$$

$$\begin{array}{r} 8 \\ - 5 \\ \hline 3 \end{array}$$

$$\begin{array}{r} 7 \\ - 5 \\ \hline 2 \end{array}$$

$$\begin{array}{r} 8 \\ - 7 \\ \hline 1 \end{array}$$

$$\begin{array}{r} 9 \\ - 0 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 7 \\ - 3 \\ \hline 4 \end{array}$$

$$\begin{array}{r} 8 \\ - 6 \\ \hline 2 \end{array}$$

$$\begin{array}{r} 2 \\ - 1 \\ \hline 1 \end{array}$$

$$\begin{array}{r} 7 \\ - 2 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 6 \\ - 1 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 3 \\ - 2 \\ \hline 1 \end{array}$$

$$\begin{array}{r} 6 \\ - 5 \\ \hline 1 \end{array}$$

$$\begin{array}{r} 6 \\ - 4 \\ \hline 2 \end{array}$$

$$\begin{array}{r} 9 \\ - 2 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 9 \\ - 5 \\ \hline 4 \end{array}$$

$$\begin{array}{r} 7 \\ - 4 \\ \hline 3 \end{array}$$

$$\begin{array}{r} 5 \\ - 3 \\ \hline 2 \end{array}$$

$$\begin{array}{r} 5 \\ - 1 \\ \hline 4 \end{array}$$

$$\begin{array}{r} 3 \\ - 1 \\ \hline 2 \end{array}$$

$$\begin{array}{r} 4 \\ - 1 \\ \hline 3 \end{array}$$

$$\begin{array}{r} 5 \\ - 4 \\ \hline 1 \end{array}$$

$$\begin{array}{r} 8 \\ - 2 \\ \hline 6 \end{array}$$

$$\begin{array}{r} 9 \\ - 7 \\ \hline 2 \end{array}$$

$$\begin{array}{r} 9 \\ - 4 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 9 \\ - 8 \\ \hline 1 \end{array}$$

$$\begin{array}{r} 9 \\ - 1 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 8 \\ - 0 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 7 \\ - 6 \\ \hline 1 \end{array}$$

$$\begin{array}{r} 6 \\ - 3 \\ \hline 3 \end{array}$$

$$\begin{array}{r} 8 \\ - 4 \\ \hline 4 \end{array}$$

$$\begin{array}{r} 8 \\ - 3 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 8 \\ - 1 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 1 \\ - 0 \\ \hline 1 \end{array}$$

254 two hundred fifty-four

Extra Practice: Subtraction (to 9)

Name _____



2 tulips and 3 daisies

How many in all?

$$2 + 3 = 5$$

5 in all

9 flowers in all

4 flowers

How many are not ?

$$9 - 4 = 5$$

5 are not .

4 flowers and 3 tulips

How many in all?

$$4 + 3 = 7$$

7 in all

9 flowers in all

2 flowers

How many are not ?

$$9 - 2 = 7$$

7 are not .

4 flowers and 2 tulips

How many in all?

$$4 + 2 = 6$$

6 in all

9 flowers in all

3 flowers

How many are not ?

$$9 - 3 = 6$$

6 are not .

Add.

$$\begin{array}{r} 5 \\ + 5 \\ \hline 10 \end{array}$$

$$\begin{array}{r} 6 \\ + 4 \\ \hline 10 \end{array}$$

$$\begin{array}{r} 7 \\ + 2 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 8 \\ + 1 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 6 \\ + 5 \\ \hline 11 \end{array}$$

$$\begin{array}{r} 3 \\ + 8 \\ \hline 11 \end{array}$$

$$\begin{array}{r} 9 \\ + 2 \\ \hline 11 \end{array}$$

$$\begin{array}{r} 7 \\ + 4 \\ \hline 11 \end{array}$$

$$\begin{array}{r} 6 \\ + 6 \\ \hline 12 \end{array}$$

$$\begin{array}{r} 5 \\ + 7 \\ \hline 12 \end{array}$$

$$\begin{array}{r} 7 \\ + 3 \\ \hline 10 \end{array}$$

$$\begin{array}{r} 9 \\ + 3 \\ \hline 12 \end{array}$$

Subtract.

$$\begin{array}{r} 10 \\ - 1 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 10 \\ - 8 \\ \hline 2 \end{array}$$

$$\begin{array}{r} 10 \\ - 7 \\ \hline 3 \end{array}$$

$$\begin{array}{r} 10 \\ - 3 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 11 \\ - 6 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 11 \\ - 2 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 11 \\ - 8 \\ \hline 3 \end{array}$$

$$\begin{array}{r} 11 \\ - 3 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 12 \\ - 9 \\ \hline 3 \end{array}$$

$$\begin{array}{r} 12 \\ - 4 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 12 \\ - 6 \\ \hline 6 \end{array}$$

$$\begin{array}{r} 12 \\ - 7 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 10 \\ - 2 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 12 \\ - 5 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 11 \\ - 7 \\ \hline 4 \end{array}$$

$$\begin{array}{r} 12 \\ - 8 \\ \hline 4 \end{array}$$

Index

- Addition
 - adding 0, 55
 - adding 1, 51
 - adding 2, 53
 - facts, see Basic facts
 - horizontal form, introduction to, 43
 - introduction to, 41
 - in problem solving, see Problem solving, addition
 - vertical form, introduction to, 49
- Area, 215
- Ball, see Geometry, sphere
- Basic facts
 - addition-subtraction
 - adding 0, 55
 - adding 1, 51
 - adding 2, 53
 - facts through 5, 56, 75, 81, 91
 - facts through 6, 83, 93
 - facts through 7, 85, 87, 95, 97
 - facts through 8, 101, 109
 - facts through 9, 103, 105, 107, 111, 113, 115
 - facts through 10, 121, 123, 181, 189
 - facts through 11, 183, 191
 - facts through 12, 185, 193, 214, 217
 - subtracting 0, 73
 - subtracting 1, 69
 - subtracting 2, 71
- Box, see Geometry, prism
- Calendar, 159
- Can, see Geometry, cylinder
- Capacity, 207-210
- Cent symbol (¢), introduction to, 57
- Celsius, 213
- Centimetre, 153
- Chart, place value, 161B-161D, 167-172, 175
- Circle, 143
- Comparison
 - capacity, 207
 - length, 149
 - mass, 211
- Cone, 142
- Corner, 149
- Counting
 - by fives, 227
 - by ones, 17-19, 37-39, 138-139, 161, 179, 221
 - by tens, 163, 223
 - by twos, 231
- Cylinder, 141
- Days of the week, 159
- Degrees Celsius, 213
- Dimes
 - related to tens, 165, 173, 223, 225
 - value, 165, 173, 223, 225
- Dot-to-dots, 18, 170, 179, 222, 224, 228
- Edge, 148
- Equal sign (=), introduction to, 43
- Estimation, 216
- Face, 147
- Fraction
 - one fourth, 205
 - one half, 203
- Geometry
 - circle, 143
 - cone, 142
 - corner, 148
 - cylinder, 141
 - edge, 148
 - face, 147
 - one fourth, of a region, 205
 - one half, of a region, 203
 - prism, 141
 - rectangle, 145
 - sphere, 142
 - square, 145
 - symmetry, 201
 - triangle, 143
- Graphs, picture and bar, 35, 199
- Greater than, 13, 132, 135, 169, 177
- Half, of a region, see One half
- Hour, 155-159
- Length, 149-154
- Less than, 31
- Litre, 210
- Mass, 211
- Measurement
 - area, 215
 - capacity, 207-210
 - centimetres, 153
 - length, 149-154
 - mass, 211
 - temperature, 213
 - time, 155-159
- Minus sign (-), introduction to, 61
- Minute, 157
- Money, 57, 77, 165, 173, 219, 223, 225, 228-230, 232, 237-239
- More, see Greater than
- Multiplication, readiness for, 233-236
- Nickels, 228-230, 232
- One fourth, 205
- One half, 203
- Order in counting
 - by ones, 17-19, 37-39, 138-139, 161, 179, 221
 - by tens, 163, 223
- 83 Pennies, 57, 77, 173
- Place value, 127-139, 161-179
- Place value chart, see Chart, place value
- Plus sign (+), introduction to, 41
- Prism, 141
- Problem solving
 - addition, 47, 89, 119, 125, 187, 197, 218, 219
 - subtraction, 65, 99, 119, 125, 197, 218, 219
- Quarter, 237-239
- Rectangle, 145
- Ruler, 153
- Sphere, 142
- Square, 145
- Subtraction
 - facts, see Basic facts
 - horizontal form, introduction to, 63
 - introduction to, 61
 - in problem solving, see Problem solving, subtraction
 - subtracting 0, 73
 - subtracting 1, 69
 - subtracting 2, 71
 - vertical form, introduction to, 67
- Symmetry, 201
- Temperature, 213
- Tens
 - counting by, 163, 223
 - place value, 127-139, 161-179
 - relation to dimes, 165, 173
- Time, 155-159
- Triangle, 143
- Writing numerals 0 to 10, 1-30



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